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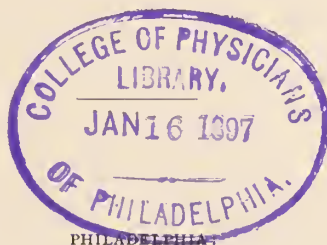
THE

Annals of Hygiene

A JOURNAL OF HEALTH.

EDITED BY
JOSEPH F. EDWARDS, A.M., M.D.

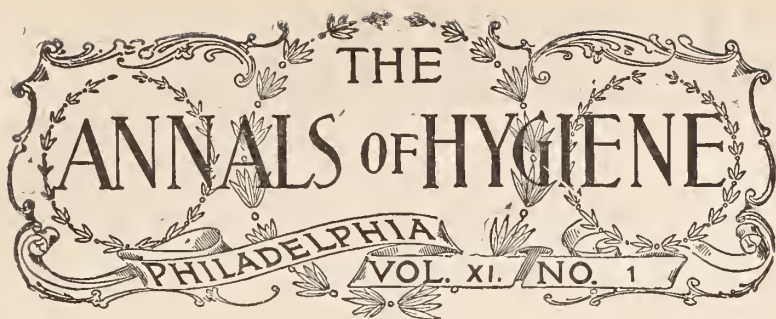
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COMMUNICATIONS.

Constipation; Biliousness; Piles.

BY JOSEPH F. EDWARDS, A.M., M.D.,

Atlantic City, N. J.



CONSTIPATED person is always a bilious person, and a bilious person is always constipated; the bowels are the human sewers and the bile is the liquid that flushes them; biliousness and constipation are twin brothers, hence my reason for treating them jointly in this series of articles. Let us, in the beginning, clearly understand what these two terms mean. Briefly speaking, life is maintained by the chemical changes that take place in the food that we eat; bread enters the mouth as bread; bread is a combination of certain elements; bread leaves the body as waste; the elements that have entered in one state of combination, these same elements leave in a different state of combination, and the change from one combination to another has given rise to, and perpetuates, a force that is manifest to us as the vital force.

In reality, the food that we eat is not consumed, in the literal sense of the term; the elements of which it is composed simply pass through our bodies, and in so passing, and while so passing, give rise to vital force; hence that which enters must also leave the body, and in a *typically* healthy person at *maturity* there will be an exact balance between the amount that is ingested as food and the amount that is voided as waste.

After the food that is eaten has been resolved into its elements and built up into new combinations by the vital processes of

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digestion, absorption, assimilation, nutrition, and excretion, a product has resulted which is not only no longer of use to the human body, but that will be positively injurious to it if allowed to remain therein; that which life demanded should be taken in, this same life now demands shall be thrown out; life is a merciless tyrant, in one sense of the word; that which has been its salvation and without which it would have been impossible, having been used and no longer required, is cast away as something to be shunned.

This is all in accord with natural laws; all life consists in constant building up and breaking down of organic combinations; some combinations are necessary to animal life; other combinations of the *same* elements will destroy animal life; while that which will destroy animal life is the very combination that is requisite for vegetable life; it is a familiar fact that the very best nourishment for vegetable life is that which animal life voids as waste. That which I have been describing I am fond of designating as the "cycle of organic matter," which can be made clear by a simple little illustration; a cow eats grass, within her body this grass is broken up into its elementary parts, and these elements, formed into new combinations, are passed from her bowels on the ground; the changes in the composition of the grass that have taken place within the body of the cow, these changes have perpetuated the life of the cow; that which she voids does not look like the beautiful green grass that she ate twenty-four hours earlier, yet, so far as the elements of organic matter that enter into its composition are concerned, it is identically the same; but these elements have been so altered in their relations one to another that the waste on the ground bears no resemblance to the grass that it was but a short time before.

Now this waste lying *on* the ground is carried by the descending rain down into the interstices of the soil, where the little grass rootlets are reaching out in search of food; this decomposing cow-waste is just what the grass wants; its elements are eaten by the grass, digested, assimilated, and elaborated, therein, into the grass, which this same cow, that has voided them, now greedily devours; the grass sustains the cow, the cow sustains the grass, and the grass, again, sustains the cow, and all these processes are carried on by changes of combination of the same organic elements.

Again, let us suppose that a man in business owes \$2,134,569,

and that he has \$9,654,321 to pay it with ; now in these two combinations of figures we have the same elementary figures, but the difference in the manner of their relation, one to the other, makes a big difference to the business man, and particularly will this be the case if, taking the same elementary figures, we find that his assets represent only \$1,234,569 ; so do we find that organic elements so combined as to make bread mean *life*, while these same elements so combined as to make waste, mean *death* to the human body.

I have said that in the *typically* healthy person, at *maturity*, the amount of organic matter that is passed *from* the body will exactly equal that which has been taken *into* the body ; while this statement is literally true, it requires some little explanation. This exact balance, you must remember, will be found only in a *typically* healthy person, but there are very few, if any, such persons to be found ; indeed, the great English physiologist, Dr. Carpenter, once stated that Weston, the pedestrian, was the only typically healthy person he had ever seen. Again, you must bear in mind that it is only during the period of maturity, when, according to natural laws, nothing should be added to, and nothing detracted from, the bulk of the body, that this exact balance will be found ; for it must be evident that during the period of growth, leading up to maturity, the amount ingested must exceed the amount voided, else there would be no growth ; while during the period from the beginning of decline to the date of death, the amount voided must be in excess over that taken in, else there would be no decline.

Dr. William A. Hammond has asserted that there is no physiological necessity for death, claiming that if it were possible for an individual to determine just how much vital force he would require each day ; and if he would consume just the amount of food necessary to produce this amount of force, that he could thereby maintain such an exact balance between breaking down and building up that everlasting life would be possible. In this idea, Dr. Hammond, while, to a certain extent, physiologically right, is, as we all know and believe, practically wrong.

However, there can be no doubt but that what we should strive for is a balance between these two vital processes.

The winter is upon us and your house is cold ; the furnace fire is started ; coal burns and the house is warm. If, before using this coal, you have it analyzed you will find that it is a

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combination of certain elements. If, now, you will take the ashes, the smoke, and the gases that result from the combustion of this coal and have them analyzed, you will find identically the same elements that you have already found in the coal; the same elements, holding different relations to each other, forming new combinations, but the same elements the combination of which formed coal. As a result of the separation of the combination of elements known as coal and their reunion into new combinations, that which is evident to our senses as *heat* has been produced; as a result of the separation of the combination of elements known as food and their reunion into new combinations, that which is evident to our senses as *life* has been produced; the furnace eats and digests coal and produces heat, just as we eat and digest food and produce life. But (and it is a very big BUT) if you want your furnace to extract all the heat that it possibly can from the coal that it eats, you must see to it that the furnace is not *constipated*, or, in other words, you must be watchful that it is not so choked with ashes that the fire cannot burn brightly; now, with this simile in mind, are you not prepared to anticipate me with a definition of constipation? are you not prepared to understand that constipation means the incomplete removal of those organic combinations that have been formed as the result of our vital acts, organic combinations that are of no further use to our bodies?

The popular idea of constipation is an erroneous one, for it applies this time only to absolute inactivity of the bowels; it is true that the word "*costive*" is often applied to difficult defecation; but in the average mind "constipation" means that the bowels are "locked up," so to speak.

Now, in truth, a person may have a regular daily evacuation; he may have two or three daily evacuations; he may even have diarrhoea and yet be constipated; for constipation means the retention within the body or within the bowels of any portion of the waste that has resulted from the vital acts.

You may rake the furnace once, twice, a dozen times daily, yet, if you do not remove *all* of the ashes, the *best* fire is not obtained; your bowels may be moved once, twice, a dozen times daily, yet, if *all* the waste is not removed, the *best* life is not obtained.

Briefly, then, you must now understand what "constipation" means; that it is a more or less incomplete removal of the waste

of the human body. Well, then, what does “*biliousness*” mean? the furnace will not rake itself; if left to itself the ashes will gradually accumulate until they have reached sufficiently great proportions to choke out the most vigorous fire, no matter how much coal you may feed to the furnace; no more can the human body rake itself; there must be some provision made for the removal of this waste; it would be inconvenient and damaging to the integrity of our delicate organisms were we to use an iron poker for this purpose; hence nature has placed within us a “*natural purgative*,” in the shape of *bile*.

The liver is the laboratory in which bile is made, and if the machinery of this factory gets out of order you are “*bilious*.” here it is in a nut-shell.

The bile has many duties to perform, but the only one with which we have here to do is its purgative action; it is nature’s medicine, not patented, nor copyrighted, nor designed to make fortunes for conscienceless advertisers; it is not a cure-all; “*babies do not cry for it* ;” it will not “*remove the results of youthful indiscretion* ;” it will not “*cure where all others fail* ;” it has not “*been discovered by some missionary among the Zulus, and now in gratitude given to the public* ;” but it is an article designed by nature to give health and comfort to the person who has sense enough to take care of his liver.

Let us now study the illustration on page 6 and we will get a very clear idea of the whole subject. Premising that the black arrows indicate food and the dotted arrows waste, and reminding you that food and waste are but different combinations of the same organic elements, we will have a little anatomy and physiology. The tube that you see starting at the mouth and terminating at the anus is the alimentary tract, consisting of the throat, stomach, and intestines, or, as you call it, bowels.

The alimentary tract is really a tube about twenty-six feet long, with a bag-like dilatation (the stomach) about eighteen inches from its beginning. In this alimentary tract digestion takes place, and into it the waste of the body is emptied, as into a sewer. Follow the black arrows (food) and you will see them passing from the mouth down into the stomach, and from here on into the bowels. Food is digested all along this tract, not only in the stomach, but in the bowels as well; this whole tract, or tube, is a chemical laboratory, and as the food is digested into nourishment suitable for the body, it is absorbed from this tract,

as indicated by the black arrows that we see passing through the walls of the tube, is taken into the circulating blood, and carried therein all over the body. In the interstices of the tissue, everywhere throughout the body, the chemical changes take place that produce life, whereby this food is converted into waste, which

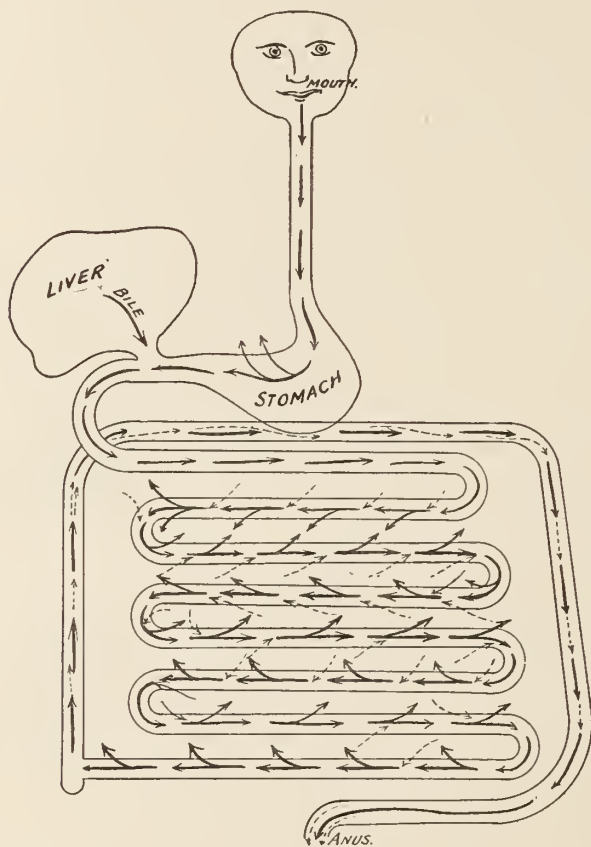


FIG. 1.—Black arrows represent digested food passing from bowels into tissues of body. Dotted arrows represent waste passing from tissues into bowels.

again, through the agency of the circulating blood, is returned to the bowels, passing through the walls of this tube, as indicated by the dotted arrows, to accumulate therein, to be pushed along, and, finally, to be voided from the anus. Divested of all

unnecessary details, this describes the processes of digestion and excretion, so far as they bear upon constipation.

You will notice that while the black arrows passing along the bowels are very heavy, those passing through the walls thereof are much lighter, by which I would make clear the fact that not all of that which is ordinarily eaten is digested, but that a goodly portion of it merely passes mechanically along the bowels and is ultimately voided therefrom. This would not be the case if we would eat only digestible articles in requisite quantity, but, practically speaking, no one does so, and it makes no real difference, provided a constipated habit does not result in an accumulation of this undigested and indigestible residue in the bowels, when it will act as a mechanical obstruction and irritant that will prove a serious menace to health.

Now, then, coming along to the large intestines we see passing

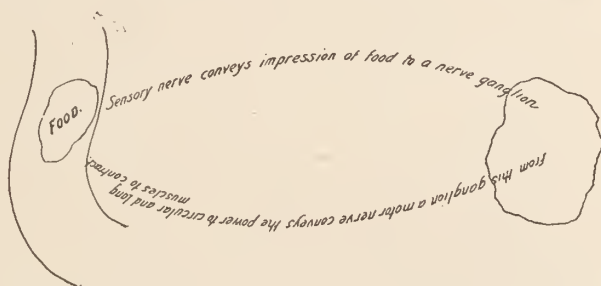


FIG. 2.

up, across, and down to the anus, heavy black and heavy dotted arrows, by which I wish to indicate that the refuse, which is thus seeking an exit from the body, consists of undigested food and the waste that has resulted from the life of the body. But, now, what is it that causes the food and waste to pass along in this tube? why does it not simply lie there as it would in any iron or glass tube outside of the body? because this tube is alive, so to speak; it has the power of motion; it is supplied with muscles, and a wave of contraction of circular muscles passes from the upper end, so as to look like a broad ring of constriction progressing slowly downward, while longitudinal muscles at the same time contract, so as to shorten the piece of intestine immediately below the slowly descending ring of constriction, causing also a certain amount of rolling movement. These movements take place periodically in proportion to the amount and character of

the contents of the bowels, the food within the bowels being the stimulus that calls these muscles into action.

Fig. 2 represents this action, and it is important to bear this in mind, because when we come to speak of the causes of constipation we will have something to say about nervous influence. Now, to go back for a moment to the bile, we find that one of its properties is the power of exciting the muscles of the bowels to increased action, and in this way aiding the onward movement of the food and waste; hence have I justly spoken of the bile as "nature's purgative." There are two forms of derangement of the liver to which I would refer; one wherein the organ is acting to excess; too much bile is being made and diarrhœa is often the result; this is not, however, the condition to which the popular term "*biliousness*" is applied; this expression being reserved for that condition of diminished activity of the liver, characterized by a deficient manufacture of bile, or of "*nature's purgative*," and constipation, or incomplete removal of waste, is the result of this deficiency of bile; here you have my justification for saying that a "constipated person is always a bilious person (unless the constipation be due to a mechanical obstruction), and that a bilious person is always constipated."

The liver has two chief functions, only with one of which—viz., the manufacture of bile—have we here to do, but when we realize that about twenty-one ounces of bile are made daily, we must be forced to admit that it plays a most important part in life.

Now then, do we not understand that "constipation" means the incomplete removal of waste, and "biliousness" means a deficiency in the manufacture of bile, and so understanding, are we not ready to study some of the effects of these conditions?

(TO BE CONTINUED.)

Aristocracy and Fecundity

Small families are hardly the rule among the English "upper ten." The average is seven or eight. The Queen is the mother of nine and the Princess of Wales of six children. Lord Abergavenny is the proud father of ten, the Duke of Argyll of twelve, the beautiful Countess of Dudley is the mother of seven, the Earl of Elsmere boasts of eleven, the Earl of Inchiquin of twelve, the Earl of Leicester of fifteen, and the Duke of Westminster of eleven.

Cremation or Earth-Burial, Which? ¹

BY E. A. GUILBERT, A.M., M.D., LL.D.,

President of the Iowa State Board of Health.



AMONG the momentous questions of this generation, which, under the authoritative touch of the *experimentum crucis*, have progressed from the domain of theorem into that of demonstration, the subject of cremation as a substitute for earth-burial has become paramount.

It is only within the last quarter of a century that special interest in the benign old-time custom has been revived, under such auspices and with such force and power as to make it the leading hygienic movement of the time.

Previous to the year 1869 no organized effort avouching the necessity of the return to the usages of the aforesaid had been inaugurated, although the question had been considerably discussed in foreign medical societies and journals. In the year aforesaid, an International Medical Congress met at Florence, Italy, and the eminent medical teachers of that nation—Professors Colletti and Castiglioni—introduced and forcibly advocated cremation as being a question of vital moment to the public health. The proposition was favorably received by the congress, and was approved with practical unanimity. In 1871 the International Medical Congress reconvened at Rome. Here the proposition was again presented, and again favorably received.

In April, 1874, a cremation congress was called at Milan by the well-known doctors Bono and Amati. Over 500 physicians and scientists attended. The question was exhaustively debated, and the proposed reform unanimously approved. An appeal was formulated to the Italian Parliament asking that body to legalize cremation in the new sanitary code then being prepared.

Previously to this Milan Congress, more or less numerous attended minor conferences had been held, during the intervals of the major congresses, in various cities of Italy. Public interest in the subject had further and markedly been aroused by numerous

¹ Advance sheets from the forthcoming Biennial Report of the State Board of Health of Iowa.

articles in the papers, and by appeals personally made by medical men of eminence to the Italian Senate and Chamber of Deputies, and the decisive battle was on. It was very "meet and proper" that the world at large should be awakened to the vast importance of this purely sanitary method of disposal of the dead, by the scientists of a land where cremation prevailed as a national custom 700 years B.C. Indeed, in the antique world the usage was general, except in Egypt, where the State religion, based on the transmigration of souls, made embalming of the dead obligatory; in Judea, where they were sepulchred, and in China, where earth-burial was the rule, and where for ages that people have considered it to be a religious duty to bring home their dead, even from foreign shores, in order that they might lie in their native soil. The revival of the cremation idea promptly extended to other lands, and in 1874 was inaugurated in England by Sir Henry Thompson, whose articles in the January and March issues of the *Contemporary Review* attracted wide public attention. Simultaneously, January 13, 1874, was effected the organization of the Cremation Society of London. This body he founded. Its membership is drawn from all classes of society, scientific and social, and the active propaganda which began with its birth has never ceased. Its official publications have been numerous and effective, and its members have continuously appeared on record in the medical and secular press on this behalf. Under the stimulus of this society the fifth crematory in Europe was built at Woking, Surrey, in 1879. To it is also due the publication of the admirable little volume of Flassie on "The Cremation of the Dead," and through it, "Being dead he yet speaketh."

On the Continent, also, the reform rapidly spread from Italy, and aggressive cremation societies arose and still flourish in Germany, France, Holland, Belgium, Switzerland, Denmark, Austria, and Portugal. This latter is the only European country, so far as I am informed, in which organized and violent opposition on the part of the Catholic clergy has appeared. But the advocates of this sanitary reform, there as elsewhere, were equal to the occasion. Their convincing arguments prevailed, and by the year 1891 cremation became lawfully optional in Portugal. The municipality of Lisbon has also decided that it shall be compulsory during epidemics. All the societies aforesaid became, as soon as formed, untiring and aggressive promulgators of the doctrine of cremation, and within ten years after the renaissance the whole

civilized "world was filled with the pious clamor" of a multitude of votaries, who affirm the demonstrative proposition that earth-burial is inhumanity to man.

The phenomenal progress of the revival conclusively proved that among thoughtful men and women there was a latent, general, and profound conviction that the time had come for a radical revision of existing burial methods in the interest of the public health.

In our own country the key-note was struck about the time it was heard in England. Here the reform was specially fostered by the distinguished surgeon, the late Dr. S. D. Gross, and by Drs. F. J. Le Moyne, of Washington, and M. L. Davis, of Lancaster, Pa., and Hugo Erichsen, of Detroit, Mich. Dr. Le Moyne built the first crematory in the United States at Washington, Pa., in 1875. Dr. Davis has been the deviser and constructor of a number since then. He, likewise, was the first to establish a paper in this interest, the *Modern Crematist*, which did yeoman service in the arduous educational campaign which was then being conducted. Whether it still lives I do not know. Dr. Erichsen was a contributor to this journal, and is the author of a volume entitled, "The Cremation of the Dead," of which the accomplished Cobb speaks highly. I have not been so fortunate as to be able to procure a copy.

The reform grew slowly yet surely, but it was not until after seven or eight years of seed-sowing that the signs of the harvest began to appear. A rarely intelligent contingent of medical men, clergymen, and laymen then materialized; cremation societies multiplied with rapidity; special literature in the form of monographs, magazine articles, and books—of which Augustus Cobb's "Earth-Burial and Cremation" is an admirable specimen—followed each other in quick succession; and in 1891 that valuable organ of the new crusade, *The Urn*, was founded in New York City. This journal is yet vigorously alive, is well supported, and is effectively edited by Mr. Louis Lange. It is as powerful a propagandist as is *Die Flamme*, the pioneer cremation journal of Europe. *Die Flamme* is the organ of the Berlin Cremation Society, a body which had, in 1892, over 1000 members. This membership has, doubtless, largely increased since that date.

Within the past five years the benign idea has firmly intrenched itself into the very citadel of public appreciation. Its literature has been greatly enlarged, and this safe, pure, and

beautiful method of the disposal of the dead has become a subject of often discussion in the great newspapers of the land. No stronger evidence than this, of the present status of this question, could be adduced. The astute editors of these papers are always swift to hear and to interpret the heart-throbs of the people, and are ever ready to give to the reading world the conclusions experts have reached with regard to questions which nearly concern the public weal.

So powerful has been the impetus thus given to the gracious reform that it moves now almost by its own momentum. It is only a question of time when the hygienic revolution, formally begun in 1869, will have accomplished its righteous purpose. *Then* every considerable city will have its own crematory, built in churchly style, having its mortuary chapel, whose "dim religious light" and appropriate decorations evince a proper respect for the dead. From such solemnizing surroundings, amid the tearful benedictions of friends and lovers, the placid corpse, rescued from the worms and the prolonged and revolting putrescence of the earth-grave,—whose pollution menaces the health and lives of the living,—is reverently committed to the purifying incinerator, which, "clothing the palpable and familiar with the golden exhalations of the dawn," "*tuto, cito et jucunde*," resolves the effete earthly tabernacle of the soul into its primal elements.

I never think of a cremation but what I am reminded of the passing of Elijah,—“And it came to pass as they went on and talked, that behold, there appeared a chariot of fire and horses of fire, and parted them both asunder, and Elijah went up by a whirlwind into heaven.”

Speaking of the advancement this reform has made, I ought to state that among that remarkable people, the Japanese, whose evolution during the last generation from semi-barbarism to a high plane of modern civilization has been one of the marvels of this wonderful century, cremation has made greater progress than in any other country. It was estimated by Cobb, in 1892, that 47 per cent. of the aggregate of that nation's dead were yearly incinerated, 10,000 annually being thus disposed of in the six public crematories of Tokio alone.

Previous to 1869—the year of renaissance—not a crematory was existent in Europe or the United States. The first one was built in Milan, Italy, in 1874. This was duplicated at Lodi in 1876. In 1875 Dr. Le Moyne built the first one in America, at

Washington, Pa. The first incineration in America was done there in December, 1876, on the body of the celebrated Baron de Palm, and many will remember the newspaper excitement which that event produced. The episode was an object lesson to the public and markedly increased the interest intelligent people were beginning to take in this subject. Like the "little cloud like a man's hand" which Elijah's servant saw from the top of Carmel, "arising out of the sea," it seemed to be of small moment, and yet was prophetic of great results.

Since 1876, mainly through private enterprise, the number of crematories has largely increased. It was stated at a congress of cremation societies, held in Vienna in 1888, that there were then fifty active crematories in the world. Within the past seven years the number must have grown to nearly 100. The aggregate of annual incineration also grows, as is shown by official reports.

In 1888 the legislature of New York appropriated \$20,000 for a crematory on Swinburne Island for the use of the State quarantine station, thus setting an example that should be followed by every maritime commonwealth. This crematory cost the State \$5500, and has been of vast service. It was erected after the plans and under the supervision of Dr. Davis, of Lancaster, Pa., who, as stated *ante*, has devised and superintended the erection of quite a number of these institutions in his own and other States.

In 1890, the municipality of Philadelphia erected a crematory in its public cemetery. The most recent great gathering of hygienists was the "International Congress of Hygiene and Demography" in London, England, August, 1891. The Iowa State Board of Health was there represented by its secretary, Dr. J. F. Kennedy. That congress was composed of representative medical men and other scientists from various countries of the world. In its sections of State hygiene, the question of cremation *versus* earth-burial was elaborately discussed. The chairman of the section, Sir Henry Thompson, opened the debate with an interesting and instructive paper. He took for a text the statistical fact that, during the three years next preceding 1891, the deaths from zymotic diseases in England and Wales alone had numbered 68,382 annually, or about one-eighth of the general mortality. He then proceeded to forcibly and convincingly speak of the malign influences exercised over the living by this

enormous aggregation of earth-buried foci of infectious disease. He remarked, "It is not too much to say that this large number of deaths from maladies which are mostly preventable is itself partly due to the fact that the dead body is permitted to propagate disease in the living. Could we arrest at once and completely the injuriously active forces which pervade it, a marked diminution would be apparent in the progress of many a local pestilence. A long experience has demonstrated that all methods of dealing with the dead body, which have for their object its conservation entire, when charged with infectious elements, permit these to be disseminated, and have often occasioned fresh outbreaks, especially in periods of epidemic visitation. The intricate, continuous, and universally pervading natural net-work of water-courses beneath the surface of the soil, associated as it is with innumerable artificial wells, reservoirs, and channels of every description, for distribution of water and collecting sewage form a system, unseen, yet scarcely imaginable in regard to its extent, by those who have not practically studied it and realized the complexity of its ramifications. In a densely populated country this system presents, perhaps, the most formidable social health problem which the sanitarian has to encounter.

"The history of the chief epidemics of the last fifty years in this country, and of the local outbreaks of fever, small-pox, etc., offers innumerable examples of propagation and extension of these diseases, due mainly, if not entirely, to the failure to prevent poisoning of these water courses, not only by excreta during life, but by dead bodies committed to the soil,—bodies which are deposited there solely in obedience to a sentiment that it is necessary to preserve the integrity of their form and the unaltered condition of their elements,—elements at that moment so destructive and so mobile."

Sir Henry, in statesman-like phrase thus concludes :

"Finally, by this process (that of incineration) two great advantages are secured to the public,—

"First, a diseased dead body is rendered incapable of communicating any malady to the living.

"Second, the assignment of large and desirable tracts of land throughout the country for the imperfect and sometimes hazardous process of purification by burial in earth is rendered needless. Every acre hitherto thus devoted, may in process of time be made free for the production of food ; or, in thickly-populated neigh-

borhoods, as open spaces for exercise and recreation, may be set apart forever to promote and maintain public health."

The points made by Sir Henry apply with equal force to our own country. Irrefutable testimony as to the dire results upon the health of the living of such avoidable contamination of the water-supplies of numerous American communities, urban and rural, has long been before the public in official documents. Witness the revelations some years ago about the contamination of the Croton River by the seepage of the eighty-three cemeteries and the innumerable farm-yards and cesspools along its banks.

The reformation of the water-supply of the city of New York, it will be remembered, cost the city a colossal sum of money, no inconsiderable part of which was expended in the wholesale abrogation of ascertained sources of pollution. Witness likewise the official reports from the cemetery region in Newton, Long Island, into which township 35,000 bodies are annually carried for burial. The state of things existent here is a blot upon our boasted civilization. Certain soulless corporations, actuated by that familiar form of greed which has no respect for the command, "And as ye would that men should do unto you, do ye also in like manner to them" there, in their public lots, in trenches ten feet wide and fifteen feet deep, bury bodies in tiers of fifteen, thus packing 1500 of God's departed poor into a space ten feet by 200! These trenches are kept open at one end until full,—that is to say, for many weeks, and when finally filled are only covered with a thin film of earth.

One of these Newton abominations rigidly requires each grave to be two feet by seven, with no earth space between coffins! Further, it permits six bodies to be buried in each grave, thus putting 8400 festering dead into each acre of ground at a profit to the owner ghoulds of \$71,500 annually, on each filled acre! In 1889 there were a million and a quarter of decomposing bodies in this township. Six years later, at this writing, this horrible menace to public health, this reneate barbarism, must contain a million and a half of "earth inhabitants." Is it marvellous that Newton has about the highest death-rate of any township in New York?

Another common phase of the question is the desecration of burial-grounds in obedience to the demands of city extension. It is no unfamiliar sight, during such events, to see rotting coffins and partly decomposed bodies lying for hours exposed

while awaiting removal ; emitting noxious gases, which are reinforced by the deadly exhalations from the upturned soil, where for many years, under the auspices of those inscrutable chemists, the worms, the products of animal decomposition have unremittingly undergone the dual process of generation and dissemination.

These poison fumes are often so obtrusively pungent as to asphyxiate the workmen engaged in the exhumation. Eassie mentions well-authenticated cases, collated from various sources of grave-diggers who, in plying their calling, have been, some dangerously and others fatally, affected by the carbonic acid flowing from the graves they were excavating. The deleterious exhalations referred to above are not confined to the point of origin, but pollute the air at large and, as has repeatedly been proven, develop deadly epidemics of germ-disease. Nor on such occasions is it unusual to observe the bones from charity lots tossed hither and yon, later on to be collected, perfunctorily, for the purpose of reinterment in pits elsewhere.

Have we any reason to criticise the loathsome conditions presiding over the burial places of the Chinese, when such things as those just described can be done with impunity in our vaunted civilization "without our special wonder"? Did the far-seeing Master have us in mind when he said, "And why beholdest thou the mote that is in thy brother's eye, but perceivest not the beam that is in thine own eye? Or how wilt thou say to thy brother, 'Let me cast out the mote from thine eye; and behold the beam in thine own eye.'" Is *verbum sat sapienti* to be taken "in a Pickwickian sense," or does it state a truth worthy of our learning.

And these are not exceptional instances of cemetery vandalism, and might be abundantly multiplied by illustrations drawn from statistical sources in Europe as well as in our land.

But to return. At the congress aforesaid, only one voice was heard in advocacy of earth-burial. Mr. Sidney Haden is a scholarly man, but his conservatism seems to be akin to that which roasted Servetus and smirched Calvin, sent Theist Bruno to the stake and prompted uncomprehending priestly bigots to discipline Galileo. Haden warmly opposed cremation, mainly on account of the possibility of crime being thereby concealed ; a medico-legal objection which has often been confuted. He made some points in his defence of earth-burial which, if the abuse is to continue, ought certainly to be incorporated into laws.

They are as follows : The condemnation of double coffins and of coffins made of indestructible material, because they prevent speedy decomposition ; the importance of ample soil intervals between coffins ; the abrogation of the unwise custom of keeping the dead unburied for many days ; and, lastly, the discontinuance of costly funerals, whereby the means of the survivors are so often sacrificed to a display which is a relic of barbaric days. His averment that cremation was an *unnatural* method of disposing of the dead was answered by Sir Spencer Wells, who affirmed that it was no more unnatural than earth-burial, or burial at sea ; and he forcibly pointed out the dangers to the living from the large tracts of land polluted by burial. He illustrated his argument with a pertinent anecdote of Sir James Simpson, the discoverer of chloroform, who suggested to a lady consultant from Ireland that she take chloroform during her labor. She refused, declaring it to be unnatural so to do. Sir James asked her how she came from Belfast. "By steamer," she replied. Whereupon he remarked, "That was a most unnatural way ; the natural way was to *swim*."

Nothing short of cremation, Sir Spencer held, would destroy the specific germs of zymotic diseases. The discussion was lengthy and full of interest. Mr. Haden, in his final reply, repeated emphatically his former averments and said, "As to the pollution of water, was not the Aldgate pump quite near a grave-yard, and yet one of the most wholesome in London?" His unfortunate query was promptly answered by Mr. Hart, who said, "At my instigation that pump had to be closed because of its deleterious properties." Strange that such a man as Haden should not remember that chemistry and its ally, the microscope, have often and often conclusively proved the clearest and most palatable well-water to be dangerously loaded with the poisonous nitrates of animal decompositions. Unhappily, these maleficent masked-batteries are not always discovered and their soundless guns spiked until the epidemics they begot have done a deal of deadly work. Another verification of Shakespearean axiom—"Fair is foul and foul is fair."

The debate was concluded by Sir Henry Thompson, who offered this resolution :

"*Resolved*, That cremation of the dead is a rational hygienic measure which is especially called for where the death occurs from contagious disease."

The proposition prevailed by acclamation, practically, there being but four negative votes. As showing the interest the public took in this discussion, it is stated in the official organ that the room in which the section convened was crowded to excess, standing-room being obtained with difficulty, and that the audience did not hesitate to express audible approval or disapproval of the various speakers on occasion. The applause was almost entirely given the advocates of burial reform.

The statutes of the various commonwealths of this country do not prescribe methods of interment, therefore cremation is not an unlawful method of disposing of the dead, as some "petting, petty cavillers" have proclaimed. Hence no appeals to State legislatures on this behalf are necessary. But organized and persistent petition endeavors should be brought to bear upon these bodies with reference to influencing the enactment of laws making it obligatory upon boards of health to incinerate the bodies of those dead from infectious disease. It seems to me that it is also our duty, as sanitarians, to foster in every way the policy of the building of crematories, so that in time the means to the benign end may be brought directly to the people of each considerable municipality, thus doing away with the present enforced transportation expenses, which can illy be borne by the many, a fact that materially interferes with a general exemplification of the process.

Aside from the cost of a building, the expense of a Siemien's reverberating furnace is not great, and is within the reach of even the smaller towns of the land. That cremation is the more economical mode of the disposal of the dead, notwithstanding the outlay on such structures, goes without saying when we compute the vast money cost to the public of avoidable epidemics. The economic argument is one of great weight in this utilitarian age, and now that sanitary science has demonstrated that the health of the living is also involved in the success of this movement, its ultimate triumph seems beyond peradventure.

It is not to be wondered at that the cremation idea has met with opposition, for from the time of the Master to this present such has been the lot of all reforms which aim to change customs that have been canonized by age. But in this case the opposition has been singularly inconclusive. With but few exceptions, it has come from men to whom even the alphabet of

hygiene is unknown. Sentiment has been invoked to combat a reform founded in reason and approved by determinate experience. A limited number have sought to make earth-burial a test of Christianity, thus adding another to the many crimes that have been committed in her name. The Bishop of Lincoln, England, in 1874, during the dawn of the reform, evolved from his inner consciousness the surprising *ex-cathedra* statement "that a revival of cremation would destroy belief in a final resurrection!" He forgot, in his affirmation of faith, be it said, to answer Earl Shaftesbury's pertinent question, "What has become of the blessed martyrs?" I might add, "Where are the innumerable, *they*, the Christian men, women, and little children, who have suffered death in conflagrations on land and sea? Is that inscrutable essence within man, the myself, the very life, which thinks and impels, loves and hates, and which we call the *soul*; is *that* really 'of the earth, earthy,' and is it positively annihilated when the cremated body gently fades away, 'like the fabric of a vision; leaving no track behind?'" If the soul of the martyr died when his body burned at the stake, what meaning is there in the liturgical averment, "The noble army of martyrs praise Thee?" That which has been annihilated can neither "praise" nor blame. The bishop's logic halts, and his rhetoric is cruelly faulty.

The only churchman in this country, so far as I now remember, who has sought to emulate the un wisdom of his brother, the bishop aforesaid, is Bishop A. Cleveland Coxe, of Western New York,—an able man, a cultured writer, and an author of repute, but who appears to look at this reform through the reverse end of his mental telescope. Ignoring a righteous verdict in which unite hundreds of fellow-clergymen, thousands of scientists and scholarly laymen, and fully nine-tenths of the educated medical men of the world, who have studied these things, which he has not; ignoring the overwhelming evidence accumulated and being accumulated against the sanitary and civil evils of earth-burial, the which he seems, likewise, disposed to consider a test of Christianity, he says, "Christian civilization substituted for the burning of beloved bodies the gentle inhumation of the cemetery, in which they are laid asleep." He further asserts that "there has been no assemblage of thinkers to give the subject dispassionate consideration, those who are the first to be ignited by the craze being known as cranks." "Ignited" is good, "craze"

is better, and "cranks" is best, coming as they do from a Reverend Father in God, who at matins, when he intones the Ninth Commandment, is supposed to join the people in his response, "Lord have mercy upon us, and incline our hearts to keep this law." I must infer, however, that the act is, in the bishop's case, somewhat perfunctory, and is done with a mental reservation that relieves himself of the duty of obedience, to which the other unpriestly fellow is held and firmly bound.

Writing upon a topic involving momentous interests, it was his bounden duty exhaustively to *study* the question in all its bearings, to the end that, as a stoled priest and a gentleman, he "might know whereof he affirmed." Then he would have learned that he was a tergiversator, one "most ignorant of what he was most assured;" who, as early as 1886, could assert that "*no* assemblage of thinkers had given this subject dispassionate consideration." *Per contra*, he would have found that several congresses, numerous attended by distinguished men, *had*, within the twelve years next preceding his *Forum* essay, been held in Europe; that very many cremation societies composed of men who, in scientific circles, had richly earned the right to be entitled thinkers, had for full ten years been in active existence in Europe and America; that leading medical societies on both continents had formally approved the reform; that through the influence exerted upon public opinion by the Cremation Society of France—which was founded in 1880—a public crematory was erected in overcrowded Pere la Chaise Cemetery, Paris, in 1886, the same year his philippic was printed. This handsome building, I may say in passing, has two incinerators, and an annual capacity of 5000 bodies. It was first used for the purpose to which it is dedicated, October 22, 1887. It has been in constant use since then, thousands of bodies having been cremated therein.

Such ignorance as Bishop Coxe—a consecrated teacher of men—displayed was as disgraceful as his epithetical violation of the Ninth Commandment was criminal.

In the *Forum* for May, 1886, the Rev. J. W. Chadwick, of Brooklyn, N. Y., replied effectively to Bishop Coxe, and thus dismissed him who had feebly attempted to

"Prove his doctrine orthodox,
By apostolic blows and knocks."

Said Chadwick in his summing up, "Those of us who believed in cremation before we read the bishop's article, having read it carefully, believe in cremation certainly as much as ever, *and perhaps a little more.*" Said the Great Teacher, "If the blind lead the blind, both shall fall into the ditch."

There, or *thereabouts*, the bishop and his meagre following were found after Chadwick's rejoinder.

Contrast Bishop Coxe's exhibition of misinformation with the thoughtful utterances of another prelate, the late Bishop of Manchester, of England. Some years ago, in a public address, he alluded to his recent consecration of a cemetery and used these timely words: "Here is another hundred acres of land withdrawn from the food-producing area of this country forever. I feel that before long we shall have to face this problem—How to bury our dead out of our sight—more practically than we have hitherto done. I hold that the earth was made, not for the dead, but for the living. Cemeteries are becoming not only a difficulty, an expense and inconvenience, but an actual danger."

This bishop's humane utterances were "the outward visible sign of the inward spiritual grace," which had descended upon him from the Master who examined before he condemned, who respected honest doubt and welcomed the doubter, and who gave his followers to understand that "to break with prejudice and convention" was a condition precedent to right thinking when confronted by all reforms, especially by such as are not only hypothetical, but also demonstrable. The other bishop perhaps unconsciously emulated Ovid who said,—

"I see the right, and I approve it too,
Condemn the wrong, and yet the wrong pursue."

Since 1886, despite Bishop Coxe's anathema, this reform has spread rapidly among the clergy, very many of whom "have the courage of their convictions" and speak out. A notable instance of this fact recently appeared of record in the symposium on cremation published in the *Chicago Tribune*. The reporter interviewed such representative clergymen as Bishop Fellows, Jenkins Lloyd Jones, Dr. H. W. Thomas, John Rusk, H. A. Delaño, and Thomas C. Hall. The result was a very positive and unanimous expression adverse to the proposition that earth-burial *is* a test of Christianity; and an equally positive expression favorable to cremation as the most beautiful, the most speedy, and the only

sanitary method of fulfilling the law, "Dust thou art, and unto dust shalt thou return."

In marked contrast to the opinions expressed by those Chicago clergymen who, in learning, piety, and good work are the peers of the hierarchy of Rome, one of the latter faith, Archbishop Ryan, of Pennsylvania, recently, as I learn from the *Urn*, "refused to permit funeral services to be held in his cathedral over the body of a parishioner about to be cremated, because it is not a Christian burial under the Catholic ritual." So it seems that there are Christian burials and *Christian* burials, and of these latter those performed under the Catholic ritual are alone canonical! I believe it is one of the dogmas of that church that only he who dies in that faith can be interred in consecrated ground. Why, then, could not this astute archbishop, for whom American popularity is claimed because of his supposed tolerance, this scholar and man of affairs, who ought not to be ignorant of the sanitary aspects of this serious question; why should he not rise to the occasion and erect and consecrate crematories in his cemeteries whose use should be optional, and thus solve the problem in favor of humanity, as it becometh one to solve it who is a prince and ruler of vast influence in his church? History avers that the church in the Middle Ages favored cremation for opinion's sake. For a humanate, a more Christian purpose—that of the health and wealth of the peoples—why should it not do so now? It seems very strange to me that the church whose policy led it, in its stormy dawn, to adopt and rechristen so many pagan holidays and customs, should have ignored cremation of the dead, the most gracious custom of all; one which is perfumed with mercy for the living and tenderness for the dead, and one which enforces in its every object lesson the comprehensive proclamation of the *Master*: "God is not the God of the *dead*, but of the *living*." I believe the church administers the sacrament of extreme unction only when it is supposed that the life drama of one of its children is in the last scene of the final act, Death being at hand to ring down the curtain; and that this last rite is the *pour prendre congé* act of the priest, the Catholic ritual providing no special service for the final interment. These being facts, I fail to comprehend how cremation is unchristian according to the Catholic ritual, the extreme rite having been performed, and the ashes of the dead having been inurned to await the resurrection. Certainly the archbishop's decree is not considered to be the rule in

Europe, where several thousand of his fellow-Catholics were cremated last year without prelatie interference.

Curiously enough, two years ago Grand Master Arnold, of the Masonic Grand Lodge of Pennsylvania, refused a subordinate lodge permission to perform the funeral service over the dead body of a brother about to be cremated. His objection was not that the act was unchristian, neither did he deny the right of a dying brother to dictate as to the disposal of his remains, as has been erroneously asserted, but his refusal was solely based on the proposition that the ritual of the Masonic burial service requires the mortuary scroll, the apron and the emblem of faith and remembrance—the significant evergreen—to be dropped into the open grave with appropriate comment, and these things, he says, cannot be done “in a *furnace* !” He sums up with this statement : “A vault *is* a grave ; a *furnace* is *not*.” The lexicographers define the word “vault” more accurately. They call it a cave, a cavern, a cell, never a *grave*. He meant, I suppose, the familiar above-ground monstrosity provided by cemetery authorities for the temporary care of the dead. If the Grand Master had ever visited the crematory in the city burial ground of Philadelphia, and had examined that edifice, and had there witnessed a cremation, as he should have done before he made his decision, he would, perhaps, have decided differently. He would have seen that the mortuary chapel is a sepulchre on a more magnificent scale, and one totally free of the charnel-house odors and the repellent gloom of the regulation cemetery *vault*. He would also have learned that a crematory is not a *furnace* in the sense that the body is buried directly in the flames, and thus reduced to nothingness, which is the purpose of all forms of burial. On the contrary, he would have seen that the incurious corpse is reverently placed in an inner sepulchre, hermetically sealed, around which the disinfecting fires fervently circulate, entering not the benignant tomb. There, saved from the worms and the menaceful pollution of a gloomy earth-grave, he would have seen the radiant mortal part serenely melt away “as the sunbeam drinketh dew.” How could an intelligent Mason seriously assert that it is unmasonic to render funeral honors to a dead brother amid such surroundings as that chapel proffers? A few necessary verbal changes in the ritual could easily have been made, and the scroll, the apron, and the evergreen could have gone with the body into the incinerator. It was as Masonic to bury them there as to fling

them into an open grave to *rot*. Let the ritual be changed to conform to the times. It is not immutable like the sacraments of the Church.

Pennsylvania conservatism cropped out in a concurrent decision of the Grand Master. The Master of a lodge refused to entertain a motion allowing the cinerary urn of a cremated brother to be placed in the lodge-room. The District Deputy Grand Master who affirmed the decision, Grand Master Arnold, said, "A lodge-room is a place for lodge labor and refreshment, and not a place of sepulture." As an old student of "the strange, mysterious, glorious science," and as one who has been a not undistinguished actor in their governing bodies, I cannot agree with Arnold. Given a fire-proof hall, owned by the craft, it seems to me that a room, appropriately arranged and decorated, might very properly be set apart and dedicated as a columbarium. In this lodges of sorrow could stately be held, and the memory and achievements of departed worth could thus be kept alive as lessons for the living. Stranger things than this may happen within the next decade, so rapid is now the progress of this wholesome reform. It amuses me to observe Masonry in staid old Pennsylvania in temporary at-one-ment with the Romish Church on this topic. Masonry, for generations, has been the *bête noire* of that far-descended and splendid autocracy. The Head of the Church has often projected damnatory bulls at the institution at long range, and during occasional rests from this diversion the Church has sat in "the cool shade of *orthodox* aristocracy," meditatively "biting its thumbs" at the craft, wondering, meanwhile, why these objugatory fusillades did not give the institution pause. These episodes amused their authors and did Masonry no harm, for the royal craft can only be "wounded in the house of its friends," and these wounds are generally unknown, as it is not permitted to "air them in the market place." So the imperial institution, in conscious rectitude, went on its stately way, "reviling not again," and utterly refusing to be annihilated. Now, *mirabile dictu*, the Church and Masonry—that is to say, quaint Pennsylvania Masonry—

"In mutual, well beseeming ranks,
March all one way."

The lion has lain down with, and outside of, the lamb, and a major sign of the millennium has appeared !

But it is safe to prophesy that while awaiting the coming of the Lord, an increasing number of Catholics—and certainly of Masons—will annually become converts to the wise doctrines of this salutary reform, which unselfishly seeks to eradicate costly evils that endanger the public health and jeopardize human lives. So far as I am informed, after due inquiry, the hierarchs in Catholic countries of Europe have not directly and publicly condemned cremation. This benignant custom had its renaissance in a Catholic country, and within the immediate shadow of the Vatican. It is largely, very largely, in evidence there now among intelligent people, and its educational influence constantly widens. In other Catholic lands on the Continent it is favorably known of men as the sole solution of the problem of the disposal of the dead in the interests of the living, and is so proclaimed, unrefuted.

Cremation and earth-burial are one in purpose,—that of resolving the dead body into its primal elements. But earth-burial does this by a slow process, which, as a rule, it takes many years to complete, and this process is one of such repulsiveness, and so full of peril to the living, that it is no marvel sanitarians should advocate incineration as the better, safer, quicker, and more humane method, forasmuch as it substitutes purity for impurity, beauty for loathsomeness, and at the same time traverses no Church rites.

Twelve years ago died a Past Grand Commander of Templars in Pennsylvania, Dr. Charles E. Blumenthal,—

“ — who bore without abuse
The grand old name of *Gentleman*,
Defamed by every charlatan,
And soiled with all ignoble use.”

He was a man distinguished in medicine, in letters, and in Masonry. He had long been an outspoken advocate of cremation, and on his death-bed he directed that his body should thus be disposed of. His wishes were respected by his family, as is not always the case, and his remains were incinerated in the famous Le Moyne crematory, at Washington, in that State, October 16, 1883. No Masonic funeral service in his honor was performed.

Noting that sin of omission, the writer hereof, in a review of the doings of Templary in 1884, used this language: “An appropriate and beautiful Masonic service could easily be arranged for such occasions. If this ancient method of disposal of the mere

shell in which lives the man should ever become universal, as it ought, for sanitary reasons especially, such a service will undoubtedly come into use." Eleven years later, after having actively engaged in the "reasonable vice" of this beneficent reform, I can say, "The hour has come!"

In this connection I must refer to another phase of this semi-official Masonic opposition, which materialized some months since in Ohio. A Cincinnati *Enquirer* reporter interviewed several past grand officers and published their views of the merits of a decision of the successor of Grand Master Arnold, who recently duplicated the ruling of his predecessor, hereinbefore mentioned. The subject of this later decision, I am happy to say, had been a member of a lodge whose Master and craft believed in lawful freedom of action, and their dead brother's body *was* honored by the usual Masonic funeral service in the crematory of Germantown, Pa., and was *then* cremated. One of the aforesaid Free Masons—all the others distinctly differing from him—vigorously opposed the reform. His contention was that it is a *heathen* method. He said, "My observation is that its advocates are generally free-thinking *foreigners* (?), unbelievers in any kind of religion, except, perhaps, some fanatical fad of their own; generally nuisances in Church, Masonry, and politics," with much more of the same sort of stuff which was quite characteristic of a robustious man who is habitually "intoxicated with the exuberance of his own verbosity," as Beaconsfield with undiplomatic frankness and less truth said of Gladstone.

The caustic editor of the *Urn* neatly disposes of the Ohio malcontent in the July number of that valuable journal. He forgot, however, in his adequate reply, to inform the party whom he was flaying that cremation is no more a heathen custom than is earth-burial, both methods having been employed by pagan nations side by side for immemorial ages. So the supporters of earth-burial are really following a pagan custom after all.

Another Ohio Past Grand officer interviewed was Past Grand Master Goodale, who was unequivocally in favor of cremation as a sanitary necessity, and saw nothing *unmasonic* therein. This gentleman but a little while before had occasion to define his position on the question: Does a Masonic brother desiring to be cremated after death really lose his right to funeral honors? The case was this: A Scotch Rite Mason, a druggist in Cincinnati, died. He had expressed a wish that his body should be cremated.

His family respected that wish, but desired that funeral honors should signalize the incineration. The Scottish Rite cathedral was asked for. The epithetical opposer aforesaid has charge of that edifice, and refused its use *because* cremation was to follow the service. The chapter-room in the Masonic Temple was promptly tendered and accepted, and Most Worshipful Brother Goodale—honor be to him—himself, with ample Masonic assistance, gave the dead brother his well-earned funeral due. Past Grand Master Goodale favors the proper changes in the funeral service to adapt it to cremation as well as to earth-burial.

Another distinguished Past Grand officer, who for many years was Grand Secretary of the Grand Lodge of Ohio, was also interviewed. This was the Hon. J. H. Bromwell, then, and now, a member of Congress from the Cincinnati district. He, likewise, approves cremation for sanitary reasons, and knows no Masonic law prohibiting the signalization of a fraternal incineration with Masonic honors. Like Most Worshipful Brother Goodale he favors rearranging the burial service for this purpose. I am heartily glad to welcome Congressman Bromwell and his associate to the augmenting army of friends of this momentous reform. He occupies a conspicuous public position, and, being an able man, can render the cause efficient aid. His influence may be invoked on collateral phases of the question ere long, as for example: In support of the pending and yet unsettled proposition to organize in our national government a department of public health, one distinctively non-partisan, permanent, and adequately endowed with legal powers as well as means wherewith to enforce them. The enactment of a law inviting the co-operation of European governments in an effort to induce "the unspeakable Turk" to suspend his Armenian and other unchristian pastimes and turn his immediate attention to the absolute necessities of sanitary reform in Mecca, from whence, more obtrusively than from the region of the Ganges, where the disease may be said to be endemic, cholera is brought to Egypt, Syria, and thence to Europe and America, by returning Moslem pilgrims. No more fruitful field than Mecca can be found for the exemplification of the saving virtue of the cremation of the dead from infectious disease. There, as we well know, evils exist, which Turkey should be compelled to eradicate because they affect the world at large. They are legitimate subjects for international intervention, for the law of nations denies the right of any one

country to become a persistent propagator of deadly epidemics which menace the peace and lives of other peoples. And again : The passage of an appropriation for the erection of crematories at all government quarantine stations, so wording the law as to make cremation of those dying there of zymotic diseases obligatory upon the quarantine authorities.

Recently, during a conversation with that eminent statesman, the sagacious and courteous Senator Allison, of Iowa, who, I think, is more nearly resemblant of Addison's characteristics, as pictured by Pope in his charming Epistle V, than almost any other of our public men, I was greatly pleased to learn that observation and reflection had combined to cause him to recognize cremation of the dead as one of the most important and far-reaching of the sanitary questions of the time, and that, in his judgment, its general substitution for earth-burial would be a boon to the living.

Should the sovereign people, as is not improbable, some time say to this cultured gentleman, "Well done, good and faithful servant, *come up higher*," sanitary science would have a "friend at court" whose commanding influence might avail it much on occasion.

And so this grand reform pursues its majestic march, receiving new and valuable adherents to its disciplined militant forces day by day. The resurgent reform needs them, and welcomes them to its counsels. Those who come to us have courageously risen above prejudice and conventionality, and have come to stay and to do. It is not long since this revival passed its tentative stage in its journey towards its ordained goal of an accomplished fact. Its triumphs during its hitherto career have been many and conclusive. They are prophecies of greater victories in the future, and I firmly believe that our children will live to see the earth-burial blot upon our civilization wiped off, and this ideal sanitary method of disposing of the dead become the rule instead of the exception, as now.

Finally, let us all "be doers of the word, and not hearers only, deceiving *ourselves*. For if any one is a hearer of the Word, and not a doer, he is like a man beholding his natural face in a mirror, for he beheld himself and has gone away ; and immediately he forgot what manner of man he was. But he who looked into the perfect law, the law of liberty, and remained thereby, being not a forgetful hearer, but a doer of work, this man shall be happy in his doing."

The Practical Requirements of Sanitation.

BY C. D. ARNOLD, M.D.,

El Reno,

Secretary of the Territorial Board of Health of Oklahoma.



EXPERIENCE and observation have led me to the conclusion that nearly all our State, county, and municipal boards of health need more legal power to peremptorily enforce their rules, regulations, and ordinances; more liberal appropriations to cover reasonably good salaries to all executive officers on these boards, together with ample incidental and emergency funds.

State boards should be as systematically organized under a legalized constitutional code and by-laws as are our very best State governments, and the same system on a minor scale modified to suit existing conditions should prevail in county and municipal boards. Not only should county boards be appointed and organized by the State boards, but all municipal boards should be appointed.

Only on the recommendation of those boards in all cities of the lower grade up to and including cities of the very highest possible grade wherein such recommendation is found, from experience, to be practicable; and all members so appointed or recommended should be held amenable to those bodies for a faithful performance of all required duties, and be further held subject to removal by or through them for dereliction of duty, inefficiency, immoral conduct, or abuse of power or privileges conferred by their office.

State boards of health should be delegated by legislative enactments plenary power, independent of courts, except in the use of unreasonable or arbitrary demands, in the exercise of their functions as sanitary bodies. An order from a State board of health to prevent or abate a nuisance dangerous to public health, or to quarantine infected persons or property, or to prevent the egress or ingress of persons from or to a domicile, town, city, or community where a dangerous contagious disease exists, should carry with it a force as effectual as that of an absolute mandamus from a tribunal against any corporation, board, or

person. This power should be conferred on every legally organized county or municipal board, subject to appeal from only to the State board, which should be final.

In the creation of boards of health competent practical sanitarians should have precedence, and the secretaries of such boards should be paid a liberal stipulated salary, graded according to the amount and character of the work required to be done.

Health boards should be divorced by statutory authority from the body politic, which tends to degrade them from the exalted, independent position they should always occupy, by using them as a sort of reward for party and personal fealty. Men of the highest practical qualification in sanitation obtainable should be preferred and honored in the filling of vacancies on health boards.

Eliminate politics from these boards and place thereon meritorious men fitted in theory, experience, and by general interest in such matters, then the grade of our local sanitarians, at least a goodly percentage thereof, would progress upward and onward to a commendable degree of proficiency under the inspiring stimulus of competitive rivalry for proficiency.

While sanitations are purifying the flood-gates of pollution and paralyzing the vital cords of contagions, other and more potent enemies to mankind are abroad in the land. I refer to the medical quacks, charlatans, mountebanks, and abortionists—*ten thousand strong*—who are menacing factors to society, to health, to longevity, and to life. Invest every State board of health with unlimited, unrestrained, discretionary, legal jurisdiction over these impostors as relates to their pretended honor, medical skill, and rights as “physicians,” with power for each board to resolve itself into a Court of Equity, to subpoena and compel the attendance of witnesses, to administer oaths, to hear and take evidence *pro* and *con*, and to render verdicts from which there is no appeal, the results would soon indicate one of the grandest, noblest works in behalf of ignorant, unsuspecting, suffering humanity ever consummated by the scions of Hygeia, and let the sceptre of justice include also the would-be higher-grade “unprofessionals,” whose number is legions, many of whom, I regret to say, are degenerate sons of our best schools. Boards have consumed much time and money in devising and legalizing ways and means to abridge the liberality of the licensing power, whereas an equal amount of time should have been spent in de-

vising and legalizing ways and means for "unlicensing" or cancelling rights granted to practise medicine.

" All buildings of either public or private character, of whatever kind, wherein any number of persons is to assemble for any purpose for which the necessities, pleasures, duties, and desires of men bring them together, should receive the approval of a health board as to location, construction, ventilation, heating, lighting, plumbing, sewerage, drainage, and ways and means of ingress and egress to and from ; also the location, construction, use, emptying, disinfection, repair, and cleansing of privies, water-closets, sinks, cess-pools, yards, basements, and other accessaries wherein filth or offensive odors accumulate. The destruction, repair, and purifying of all buildings of dangerous construction or conditions should be done under the advice of a board of health. The law should be so constructed as to compel owners, agents, assignees, or occupants of any lot, building, or property wherein any unsanitary conditions exist to remove it on the order of the board of health or be subjected to a specific fine.

A professorship in hygiene should be established in every medical college, which candidates for graduation in medicine should be required to attend during the term next preceding their graduation.

Every public school should be required by State laws to give instruction in hygiene, covering its practical bearings in all its relations to health in the school, home, and business life.

Every State board of health should have as a member thereof a bacteriologist, an analytical chemist, a civil and sanitary engineer, and the State's attorney, each of whom should act and advise in cases in the line of his respective specialty, also every city board of health should contain the city attorney, a civil and sanitary engineer, and, where possible, a bacteriologist and chemist. In Oklahoma we need all of the above and much more not herein stated in legalized perfection. We have some of it in a modified form and anticipate considerable advances fifteen months hence.

Pea Vines.

Edward Atkinson, the Boston economist, makes the prediction that the pea vine farmer is the coming man of the South. It is necessary to find a cheap nitrogenous product, he holds, and the Southern pea vine is this supply.

Defects in Sanitary Legislation in Ohio.

BY C. O. PROBST, M.D.,
Secretary Ohio State Board of Health.

IN considering "wherein the existing legislation is weak and wherein the public most needs instruction," I can reply only for my own State.

We are in most respects already considerably ahead of the people's wants in the matter of sanitary legislation. Our laws, as a rule, are broad enough to meet most of the demands of good sanitation. The trouble is in their enforcement. There is a marked difference in different communities in this respect. In some of our towns the fundamental principles are fairly well enforced. Contagious diseases, even those of mild character, such as measles and whooping-cough, are well controlled by quarantine and disinfection. The disposal of garbage and human excrement is properly looked after. Plumbing and house-drainage, purity of water-supply, examination of school buildings, and of milk and other food supplies, all receive attention. But this is the exception rather than the rule.

Now our people are fairly homogeneous, and the different results in enforcing our health laws must be due to the difference in the men who enforce them. It is an oft-repeated expression that the people must be educated in sanitary matters before results of any consequence can be attained, but this educational process need be but a very short one. To illustrate: a city of our State of about 8000 population was paying but little attention to sanitary matters until a lawyer in the town was appointed on the board of health. Some of his neighbors call him a "crank," but he is the kind of crank that "makes the wheels go round." He visited a number of cities at his own expense and looked into the methods of their board of health. He drew up a very complete sanitary code (our boards of health are authorized to adopt and enforce such sanitary rules as they deem necessary) and it was adopted. Weekly meetings, which by good business methods were seldom more than half an hour long, were started.

The hog-pen nuisance was taken up and fought through the courts, resulting in its abolishment. Every uncemented privy vault was done away with. A satisfactory arrangement was made for removing and caring for night-soil and garbage. In a word,

the town was placed in good sanitary condition, and has been kept so ever since. The board of health is respected and feared, and it is considered an honor to be appointed a member of it. The *revolution* lasted but a short time, showing that educational processes may be very rapid when the board of health is thoroughly in earnest.

This is possible in any of our cities or villages if the right man will take hold of it. The problem for us would then appear to be, how to secure the right man.

It is surely unwise to trust to the happy chance of finding a philanthropist in each community, but good men may be found if the financial compensation is made sufficient. One way, then, to better present conditions would be to enact a State law providing for a minimum sanitary levy in each city, village, and township, determined either by population or taxable property, and fix a compensation for the health officer, who is the executive officer in Ohio, at a figure that would induce good men to take the position. His appointment should be by competitive examination, and his term of office during good behavior. It would only be possible, of course, for large cities to pay a salary which would justify a man in giving his whole time to the work, but in smaller places it would not be necessary for him to do this. But every village of over 3000 inhabitants should have one or more sanitary inspectors constantly employed under the direction of the health officer. Methods for restricting contagious diseases, such as reporting cases, quarantine, and disinfection, should be provided for by statute, allowing any municipality to do more, but not less than is there demanded.


The abatement of nuisances and other matters of local interest would perhaps better be left to local governments.

This plan means an increase in taxation, and will always meet with the opposition of conservative members of legislature, but I am confident that our health service will never be brought up to the proper standard until the people are willing, or are compelled to pay a proper price for such work. Money in this case is but a form of force, and there must always be a constant relation between the force used and amount of work done.

We have, of course, other defects in sanitary legislation, and changes in various directions are desirable, but I would advocate first of all that our health service be placed on a proper financial footing; other changes will follow of themselves.

Practical Requirements of Sanitary Legislation and Sanitary Education.

BY JEROME COCHRAN, M.D.,
State Health Officer of Alabama.

N reply to your letter in regard to the practical requirements of sanitary legislation and sanitary education, my opinions are briefly as follows :

(1) Every civilized State should have a State board of health which should be composed of sanitary experts ; and subordinate to the State board there should be a local board in every county and city, all acting in concert.

(2) The powers given to these boards should vary with the differences in the conditions obtaining in the different localities. As localities become more populous and more wealthy the needs of sanitary supervision increase, and the means available for sanitary work correspondingly increase.

(3) All boards of health should be invested with powers and means to resist the invasion and dissemination of epidemic diseases, and for the abatement of nuisances prejudicial to public health.

(4) Sanitary boards and officials should be absolutely independent of political parties, so that they may discharge their duties without fear or favor.

(5) All members of the medical profession should be instructed in the principles of sanitary knowledge, and health officials should be experts in such knowledge.

(6) I am not in favor of teaching hygiene in the public schools. It is a sort of knowledge that is not adapted to the needs of elementary instruction. The children are stuffed with it, but don't learn it in any proper sense of the word ; and much that is taught under the name of hygiene is inadequate or untrue. As all wise people get their medical advice from medical experts, so all wise people should get their sanitary advice from sanitary experts. I have no sympathy with the doctrine that every man should be his own doctor or his own lawyer. Just as little sympathy have I with the doctrine that every man should be his own sanitarian.

There is nothing new in all this, but you have asked my opinions, and I give them to you.

Some Simple Hydro-Therapeutic Measures.

BY RUDOLF C. KAISER, M.D.,

East Onondaga, N. Y.



USE in my practice some measures recommended by so-called hydropaths, which I found very efficient, and I thought you would like to communicate them to your readers.

Sore Throat, especially Inflammatory Sore Throat of Acute Variety.—Dip a handkerchief into cold water, wring out nearly dry, and apply folded to throat. Cover this compress with a dry flannel. Renew when compress becomes warm.

For Constipation.—Take a hip-bath, temperature from 65° to 70° F. Shoulders and lower legs should be well covered by blankets. Rub abdomen from waist-line to groins with a rough cloth all the time while remaining in bath. Bath should last about ten minutes, and every following day a few minutes longer, and water should be used cooler day after day. A Sitz-bath-tub is best suited for such a bath, but an ordinary wash-tub will answer.

If very constipated, it is often necessary to take two or even three baths daily till bowels are more active.

This bath also acts as a powerful stimulant to the kidneys. A diet of Graham bread and fruit will facilitate matters very much.

A little boy about two months old, who was very constipated, was ruptured as a result of constipation.

A treatment of two Sitz-baths daily of ten minutes' duration, continued for two weeks, resulted in cure of constipation and also of rupture. The mother nursed the child and no change in diet was made.


To Raise Bread and Diphtheria in the Same Bed.

The city physician of Rochester, Dr. Seitz, while visiting a house on Caswell Court, an over-populated street, recently discovered that a pan of dough had been placed to rise in the bed of a boy ill of diphtheria. A quilt was thrown over the patient and the dough. There are four other children in the family.

The Decline of Tubercular Consumption in Philadelphia.¹

BY PEMBERTON DUDLEY, M.D.,

Philadelphia, Pa.

HE writer has recently received a pamphlet containing a summary of the vital statistics of the New England States for the year 1892, compiled under the direction of secretaries of the State boards of health of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

In reference to pulmonary consumption, the pamphlet contains the announcement that the mortality-rate was lowest in Connecticut and highest in Massachusetts, the number to each 10,000 of population being 18.2 and 24.3 respectively, and the average for the entire region 21.8; and then follows the interesting statement that "in those States which have had registration for several years the mortality from this cause (consumption) is found to be steadily diminishing."

That there has been for many years a quite continuous diminution of the mortality rate from consumption in the city of Philadelphia is shown by the published records, and was already known to the writer of this paper. But the fact of the diminution was by him presumed to be largely due to local causes, as it doubtless is. Yet, when we read that a similar decrease has been noted throughout all the New England States which have had registration for several years,—that is, all of them except the single State of Maine,—it furnishes some ground for the inference that it is due to causes operating generally, as well as locally, and, at any rate, it becomes an object of much interest to ascertain just what these causes may be, and how we may best promote their more vigorous operation.

The deaths from consumption of the lungs in the city of Philadelphia for the fourteen years last past were as follows :

¹ Read before the Homœopathic Medical Society of the State of Pennsylvania. From the Hahnemannian Monthly.

1881	2768	1888	2697
1882	2809	1889	2532
1883	2798	1890	2760
1884	2801	1891	2624
1885	2821	1892	2709
1886	2834	1893	2671
1887	2800	1894	2513

In brief, it is observed that the number of deaths for the first seven years averaged 2804 per annum, and that the number did not vary from this average more than 36 in any single year. In the last seven years the average was 2644 per annum, a falling off of 160, and at no time during the latter period did the total come within 44 of the general average of the former period.

These figures show that there has been an absolute diminution in the aggregate of deaths from consumption during the past fourteen years. But this is not the most significant part of the statement. In order to appreciate the change that has occurred in that vast city, we must not omit to take into account the enormous increase in population.

According to the United States census, Philadelphia contained, in 1880, a population in round figures of 847,000, and in 1890, 1,047,000, an increase of just 20,000 per annum. This would give us as the population at the beginning of our period, 867,000. During the latter portion of the period the increase has been still more rapid, and the City Board of Health estimates the population in 1894 at 1,140,000, a total increase since 1881 of 293,000, or nearly 34.6 per cent. From these figures let us compute the diminution as it actually occurred, taking the estimated population as the basis of our calculation, and allowing for an increase of population amounting to 20,000 per annum from 1880 to 1890, and 23,000 per annum since 1890.

The following table shows the number of deaths from consumption to each 10,000 of the population for each of the fourteen years :

1881	31.93	1888	26.78
1882	31.67	1889	24.66
1883	30.84	1890	26.36
1884	30.21	1891	24.52
1885	29.79	1892	24.60
1886	29.30	1893	23.93
1887	28.36	1894	22.04

Thus, in each year, we see a diminution, except in 1890 and 1892. The increase in 1890 is doubtless due to the severe and widespread prevalence of la grippe in 1889 and 1890 ; the increase in 1892 is so slight as to be insignificant. The total diminution, from 31.93 down to 22.04, is equal to nearly 31 per cent., a most remarkable and gratifying change.

What are the causes of this decrease in the mortality from consumption? Undoubtedly they are numerous and various. During the period above mentioned several prominent influences have been at work, any one of which might have operated in favorable ways. I will mention a few of these.

First, We all know that during this period there has been a marked change in public sentiment respecting the necessity and value of public and private sanitation. The need of cleanliness, personal, domestic, and municipal, as an essential to health, has come to be quite generally recognized and acted upon. Second, our physicians—and measurably our people—are beginning to accept the doctrine of the contagiousness of tubercular phthisis and to take measures to prevent infection. Third, there has been in Philadelphia within the past fourteen years a tremendous change in the condition of its streets, lanes, and alleys. A general system of underground drainage has taken the place of the old "surface" system, which, only a few years ago, made all its gutters and pavements a nuisance and a peril to the pedestrian. We all are aware of the relation between the excess of soil moisture and the prevalence of pulmonary consumption, as demonstrated years ago in England and Massachusetts, and more recently in Pennsylvania. And this soil moisture in the city of Philadelphia has been largely remedied by her improved sewerage system, and, quite recently, by the introduction of impervious asphalt paving in hundreds of miles of her principal streets and in a large proportion of her narrower lanes and alleys. We shall be justified in looking for a further diminution of consumption in the next few years. May it be as marked as in the past.

Graded Eggs.

In Paris markets the eggs are all dated, and one pays according to their freshness, so that it is possible to be certain of newly-laid eggs, or if it be necessary to be economical, then yesterday's eggs, or day before yesterday's, are offered at a slight reduction.

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Functional Nervous Diseases.

(Continued from December issue.)

WHAT the water and the fire are to the locomotive the nervous system is to the human body; the fire and the water produce an agency (steam) which, when conveyed by pipes to the different parts of the machine, convert the *capacity* of each into a *potentiality*, with the resultant activity of the whole, so the human nervous system produces an agency (let us call it vital steam) which, when conveyed by nerves to the various organs of the body, convert their *capacity* into *potentiality* with the resultant vitality of the whole body.

That the power of functional activity does not reside in any organ becomes very manifest when we remember that by severing a nerve up in the neck we can instantly stop the action of the heart; we have not touched the heart itself; we have not in any way altered the composition or structure of the heart; if it was a sound and capable heart the moment before, so is it an equally sound and capable heart the moment after the severance of this nerve; the heart itself is just the same, but its inherent *capacity* can be no longer converted into *potentiality*, because we have interrupted the means by which the necessary power has been transmitted from its origin in the nervous system to its manifestation in the heart.

To make this idea still more clear, let us use the familiar

electric light as an illustration. In the production of the electric light we have three essential conditions,—a dynamo, a wire, and a burner, so to speak. In the burner resides the *capacity* of illumination that is converted into a *potentiality* by the influence of an agency (electricity) generated by the dynamo, and conveyed by the wire from its point of generation to its point of manifestation; take away any one of these three essentials and there will be no light, there must be a generator, a transmitter, and an exhibiter; with a perfect generator and a perfect exhibiter, destroy the continuity of the transmitter and the perfection of the exhibiter is of no use; damage the exhibiter and the exhibition of the force of a perfect generator will be imperfect; damage the generator, and even though the transmitting attribute of the transmitter and the exhibiting capacity of the exhibiter be intact, the resultant display of force will be imperfect.

That which occurs with the electric light is exactly paralleled by that which occurs within the body; the nervous system generates, the nerves transmit, and the organs make manifest a force, the aggregate evidences and workings of which we call life.

Now then if the exhibiter and the transmitter and the generator be all in good working order, but if a deficient amount of steam be furnished to the generator or dynamo, the resultant illumination will not be brilliant; the factors necessary for a brilliant light are present and their capacity is intact, but the full possibilities of their capacities are not made manifest because the exciting power is deficient; such a condition may be described as a *functional* disorder of the electric light plant; that there is something wrong is plainly evident to any one who looks at the defective light, but that this defect is not due to anything *materially* wrong with the machinery, with any part of the three essentials, is clearly apparent to the experienced electrician who recognizes that he only requires more steam to bring out the full capacities of his lights.

To apply this illustration to the human body it may be evident to the casual observer that so-and-so is not well; he may show it in his actions or his work or his talk or in the expression of his face; the experienced physician may fail to detect any organic disease or disorder; he may find all of the organs sound and apparently *capable* of doing their full measure of work, yet not doing so. The patient himself is conscious of the imperfect or incomplete action of one or more organs, and when we turn to the nerv-

ous system we find an explanation of the whole situation. We find that, because of the condition that I will describe later on, the nervous system is not capable of generating a sufficiency of nervous force or “vital steam” to make potential the capabilities of the healthy organs of a healthy body. Such a body is *functionally* disordered; the mechanical necessities and the capabilities for vigorous, healthy life are all there, but they cannot be utilized to their fullest capacity, because there is a deficiency of the necessary *vis-a-tergo*; the organs are capable of utilizing, the nerves are capable of transmitting, but the nerve-centres are not capable of originating the full measure of nerve force requisite for vigorous, healthy life.

If the heart be fatty, if the nerve be altered in its constituency; if the nerve-centres be hardened or sclerosed, or in any other way changed or altered in their composition, then, no matter how favorable and effective may be the surrounding conditions, the full measure of functional activity is impossible. If one has a fatty heart, which means a weakened heart, or a heart the valves of which are deranged, then is the *capacity* of this heart lessened, and no matter how perfect may be the origination and transmission of nerve-force, the full measure of heart function is impossible; if one has structural disease of the kidneys their perfect function is impossible, no matter how much nerve-force may be transmitted to them; or if one has *organic* disease of the nerve-centres, it is obviously impossible for such centres to originate nervous force of quality and quantity necessary for the full functional activity of organs that are capable of utilizing if they but receive it.

Thus, then, we see the great importance of differentiating between *organic* and *functional* disorders, the former capable merely of palliation, the latter easily curable if properly and clearly comprehended.

Now my contention is that the cause of most *functional* diseases or disorders is to be looked for in the nervous system. I do not say *all*, but *most*, because I am aware that local conditions acting locally may and do interfere with the proper functional work of an organ, but I believe that such causes are comparatively rare when compared with the grand total of functional disorders.

My idea is that when any organ or any number of organs, the composition of which is intact, the capacities of which are good,

do not perform the full measure of their functions, that the defect is due to the fact that they do not receive the requisite amount of nervous force or "*vital steam*," and that if there be no organic disease of the nervous centres, that this deficient production of nervous force is due to the cause or condition that I am now about to describe.

(TO BE CONTINUED.)

We Are Not Degenerate.

Dr. William Pepper evidently holds this view, for in a recent address before the Mississippi Valley Medical Association he uttered the following words :

" Each age has its Jeremiahs, who lament the degeneracy of the time. It is probably that Nordau, who is the latest, is also the most learned and ingenious of these apostles of pessimism. But it is easy to make out a strong case by collecting data which support a certain view and excluding all which are opposed. His book, which has had the vogue of a popular novel, will be scarcely more long-lived or influential. It is a poor business to oppose mere assertion to elaborate argument, as I am doing ; but I have such deep and unchanging faith in the improvement, physical, intellectual, and moral, of the race, that I cannot let pass unchallenged what seem to me the specious and unsubstantial arguments of the pessimists. Thirty years ago many people were comfortably settled in their conviction that the attempt to establish on this continent an enduring, vigorous, native-born race was doomed to failure. The American climate was to prove too much for us ; and those who survived the climate were to succumb to the enervating effects of luxury, or to fall in the deadly struggle for the almighty dollar. We can afford to laugh at these predictions now, when we see the splendid physique of the men and women of the rising generations ; when we see the triumphant advance of our industrial and commercial position ; when we see the development of a vigorous literary, scientific, and artistic activity ; when we see a progress in the wise and enlightened use of wealth which extorts the admiration of the world ; and when we see our beloved institutions standing the stress of every storm and adapting themselves more and more marvellously to the growth of a community of 70,000,000 peaceful and prosperous freemen."



New Sewerage for New Orleans.

New Orleans is to have a new and complete system of sewerage, which is to cost about \$8,000,000. It will take at least four or five years to complete the work.

Child Suicide in Paris.

In Paris of late there have been several suicides of children. The youngest of these was only nine years of age. The child had been missing for a week, when his body was found in the Seine. On it was a paper on which was written, "My name is Alfred Fournot. I am killing myself. My father has scolded me."

Hair Markets.

At Morlaas, in the Lower Pyrenees, a hair market is held every Friday. The village has but one street, up and down which the traders walk, with long shears hanging from their leather belts. The girls who wish to sell their hair stand on the doorsteps of the houses; they let down their braids for inspection; a bargain is struck, the money paid, and the braids snipped off on the spot. The price varies from three to twenty francs.

Poison on Bank-Notes.

A bank cashier, of Vienna, recently died from the effects of touching his lips with his fingers when counting money. At an examination of the vaults it fell to his lot to count a large number of small bills, and, although repeatedly warned, he continued mechanically to touch his lips when his fingers became dry. That evening he felt a smarting pain in his lip, but did not attend to it until a swelling had set in the next day. He then consulted a surgeon, who insisted upon an immediate operation on the tumor that had in the mean time assumed alarming proportions. But, in spite of the operation, the patient died three days after of blood-poisoning.

Perfect Types of Women.

An English surgeon, Mr. Frederick J. Grant, has written a novel called "Perfect Womanhood," in which types of perfect modern womanhood are described. To his mind they appear to be shown in the characters of a trained nurse, a deaconess associate, a female medical missionary, a ritualistic maiden, and a few others. We see no mention of the bicycle girl.—*Medical Record*.

A Recommendation.

Patent Medicine Man—"Madam, did your husband use the bottle of Fakem's balm of life I left him?"

Wife—"Yes. It took immediate effect."

Patent Medicine Man—"Good. Then you can conscientiously say that he will use no other."

Wife—"I'm quite sure of it: he's dead."

Inherited Age.

Dr. B. W. Richardson gives a series of observations on the duration of life of the offspring as compared with that of the parents. He considers that if the ages of the two parents and of the four grandparents be added together and divided by six, the age of the case in point will be told, with an average variation of not more than two. If the ages of the parents are high the offspring tends to improve on them; if low (say an average of forty or lower), the life of the offspring will probably be shorter.—*Dublin Journal of Medical Science*.

How to Keep a Baby Quiet.

I went to see a woman last Tuesday morning who has a young son,—a very young son,—I think he's not much over a year old, in fact. He's the noisiest little fellow I ever saw, but this morning he kept still so long that the mother and I rushed into the nursery to see what the nurse had done to him. She had simply found a way to keep him quiet and out of mischief. He had little bits of raw cotton stuck to his hands with molasses, and he was trying to pick them off. He was too busy to cry, and for the first time since I have known him he was absolutely quiet for a quarter of an hour.—*Washington Post*.

Respiratory Capacity.

Enlarged breathing capacity is desirable for many reasons. It not only insures an abundant supply of oxygen which may be called its direct effect, but, indirectly, it produces results of great æsthetic value. It deepens and broadens the chest, causing the figure to become more erect, the step more elastic and vigorous, and the carriage of the body more pleasing and graceful.—*Medical Brief*.

Rheumatism.

This malady is entirely preventable in one or all three ways : First, and most important, by abstaining from such articles of diet as are known to consist very largely or almost entirely of nitrogen, such as lean meat, cheese, and milk ; second, by taking in as much oxygen by means of active exercise as may be necessary to oxidize all the nitrogen in the blood ; and third, if one is unwilling or unable to eat less meat and take more exercise, then the next best thing to do is to drink enough pure water to dissolve as much of the unoxidized nitrogen as possible, and thus to eliminate it from the blood by means of the kidneys.—*Southern Dental Journal*.

External Use of Wine.

In his entertaining volume of reminiscences, "Dead Leaves and Living Seeds," just published, Rev. Harry Jones recounts the following quaint story : He says, "I was staying with a 'temperate' friend in the west of England who was summoned from his luncheon to see an unexpected 'deputation.' On his return to the dining-room with a smile on his face I asked him what had caused it. He explained. The leader of the party (a teetotal one) had urged that, however occasionally it might be permitted, there was no scriptural recommendation of alcohol. My friend demurred, remarking that St. Paul is recorded as having written to his young friend Timothy, 'Drink no longer water, but use a little wine for thy stomach's sake, and thine often infirmities.' 'Oh, sir,' replied the chief speaker, 'excuse me, but the word is "use," and means external application only.' Picture a party having wine sent round in a basin, and a host saying, 'Fill your sponges, gentlemen ; let's have another dab.'"

“Let the Inebriate Smile Again.”—A Hint from Norway.

A valuable hint comes to us from Norway. The way seems to be opening up for a form of moderate excise legislation that will in the long run be in the best interests of the lovers of alcohol. In Christiania, the capital of that land, no sale of beer or spirits is now permitted from Saturday afternoon to Monday morning, except to permanent guests residing at respectable cafés. This regulation has led to such a great diminution in the consumption of drinkables that the publicans have begun to complain that the liquor trade is no longer profitable. One day's break in the week is enough to show a great many imbibers the advantages of abstinence, even if it be limited in duration.—*The Sanitarian*.

A Heavy Liquor Bill.

The following are aggregate amounts of money spent for liquors and other articles of consumption by the people of this country during the past year, as well as for education and foreign missions. They are compiled from the internal revenue statistics and other reliable sources. The exhibit is startling, and should awaken all Christian people and good citizens to unite their influence to reform and suppress the terrible drink curse of the land :

Foreign missions	\$5,000,000
Brick	85,000,000
Potatoes	110,000,000
Churches	125,000,000
Public education	165,000,000
Silk goods	165,000,000
Furniture	175,000,000
Sugar and molasses	225,000,000
Woollen goods	250,000,000
Boots and shoes	335,000,000
Flour	345,000,000
Printing and publishing	370,000,000
Cotton goods	380,000,000
Sawed lumber	495,000,000
Tobacco	515,000,000
Iron and steel	560,000,000
Meat	870,000,000
Liquors	1,080,000,000

—*Good Health*.

Away with the Toothpick.

A while ago I sought to condemn the public use of the napkin as a bib in the hotel dining-rooms and restaurants. Now I'm going to cry out against serving little quill toothpicks in a wine- or egg-glass after coffee or dessert. It is an abominable custom, of which not a few first-class hotels have long been guilty. No lady or gentleman ever takes one. The mere suggestion of such things is repulsive to refined people. As well might tooth-brushes be served. The very thought of such things incident to gastronomy is repellent to the cultured person, and, although some men and women do take and use them, it is all wrong. Why should hotels furnish them? Why tempt people to be vulgar? Dear knows, we have enough without expecting hotels to make recruits! And such elegantly dressed ones, too!—*Hotel Mail*.

A Secret of Health and Spirits.

“Can white men labor in the tropics regularly, day by day, hard enough to gain their livelihood?” asks Mr. Frederick Boyle, in the *New Review*. To a question like that, one best replies by citing examples. But in this age of the world they are not easily produced, owing to circumstances. Individual cases abound, but they will not do.

He calls attention to the success with which white men have worked and work to this day in Costa Rica, the history of which he hopes is a foreshadowing of that of his own tropical colony: “For it is to be observed that these Costa Ricans tend their own plot of banana and cacao in the damp heat of the *Tierra caliente*. But they are working for their own interest, not for wages. So are those individual Europeans scattered up and down in tropical America. And it is my impression that a great secret lies here. A man will keep his health and spirits where he is tilling his own land under conditions which would prostrate him if he were toiling for another. The belief that white men degenerate in the tropics is founded especially on the case of the Portuguese. It will not bear scrutiny.”

For this obvious reason, among others, that the Portuguese have deteriorated in their own country quite as much as abroad. Mr. Boyle maintains that the finest races in the world live in the hottest countries.

Holes in Swiss Cheese.

The man who wanted his "Schweitzerkase" without the holes in it, because he objected to paying for the holes, did not know that if it were not for those very holes the cheese would not be as delicious to the taste. During the process of manufacture the cheese is stabbed or pricked with needles to allow the escape of the air in the cheese and to facilitate its cure. The holes increase in size as the cheese goes on drying, until they become of considerable size. The grease with which the holes are larded is not found in the imitation Swiss cheese, for the real Swiss cheese cannot be imitated in this respect, the imported cheese being lined in these holes with richness all its own, while the American Swiss cheese cannot be made except with holes as dry as a bone.

Turkish Baths.

From the fact that the form of treatment secured by the Turkish bath unites all the elements, making it a perfect combination of air, water, and different degrees of temperature, comes our belief and assertion that this form of bathing is bound to supersede all others, as being more complete and useful in every respect, and is eventually and inevitably to be recognized as the most potent agent in the physician's armamentarium, says Dr. Charles H. Shepard, of Brooklyn, in the *Journal of American Medical Association*, September 14. It is a process which will in a few minutes secure a general diaphoresis, bring the circulation to the extremities, equalize the arterial action, soothe disordered nerves, while it allays spasm immediately. It is obvious that such action would be of great service in every case of internal congestion, and in obviating diseases of the liver and kidneys. In the treatment of diseases of the joints its efficacy is remarkable, also in all classes of cutaneous diseases. In bronchial or laryngeal inflammation the surface affected is instantaneously reached, and instances of gradual relief from chronic disorder, particularly gout and rheumatism, might be multiplied without end. At the same time it is an incomparable luxury and most valuable as a means of training in health. In all diseases it is a remedy or palliative.

It is only necessary that the properties of the Turkish bath should be readily understood to insure its adoption by an intelli-

gent public. Its simplicity and natural action place it in antagonism to all empiricism. This bath stands alone on its merits, a great and acknowledged power. It will remain to diminish the pains and penalties that afflict the large majority of our fellow-creatures, and to increase the good things that fortune showers upon us. It is at once the perfection and glory of all baths.

Cost of Cremation in New York.

The charge for cremating the body of an adult in New York City is \$35 and for that of a child \$25. Urns or vases vary in price from \$6 to \$45; the former are of bronze and white metal, the latter of serpentine stone marble, etc. For \$25 a niche may be bought in the crematory where the urn will be cared for, or it may be taken possession of by the family. About one-half are said to be kept at the crematory; some are taken away and placed in safety-deposit vaults and others are kept among the most sacred treasures of the home. A newspaper report has it that one relict carries the ashes of her deceased husband wherever she goes,—to Europe and back several times, and frequently to the sea-shore and mountains. It is not stated what rate of fare is charged for the “remains.”—*Journal American Medical Association.*

Royalty Rises Early.

Empress Elizabeth, of Austria, is the despair of the management of the bathing establishment at Aix-les-Bains. On her account they are compelled to keep it open all night and to provide it with a double set of attendants. Having a horror of being mobbed by the somewhat vulgar crowd of English, Germans, and Italians with which that fashionable watering-place is swarming just at present, she insists on taking her bath at the unearthly hour of 3.30 in the morning, when, of course, she has the whole establishment to herself and runs no risk of meeting any strangers. In this custom of getting up at strange hours she is in sympathy with her husband, for Francis Joseph is in bed every night at 9 and up in the morning by 4 at the very latest, having accomplished a considerable portion of the business of the day before the majority of his subjects open their eyes.

With the exception of Queen Victoria and her son, the

Prince of Wales, nearly all the royalties of Europe have a very praiseworthy but at the same time exceedingly inconvenient habit of getting up very early in the day. Thus, Emperor William is generally about by 5 in the morning; the Queen Regent, of Spain, is dressed for the day at 7, although no one else is awake in Madrid before 11 o'clock or noon; King Humbert's hour for rising is 6, as is that of King Oscar and King Charles, of Roumania, while the late Emperor Dom Pedro, of Brazil, when in Europe, was wont to get up at 3 and to call upon his friends and acquaintances at the extraordinary hours of 4 and 5 in the morning. Queen Victoria alone never rises before 8, while breakfast at Marlborough House and Sandringham is rarely partaken of before 10, the Prince of Wales going to bed very late.

Remarks on the Hygiene of Children's Shoes.

Dr. Crozer Griffith (*University Medical Magazine*) calls attention to the importance of proper foot-covering for children. Almost always shoes are improperly made. It is often supposed that a baby's foot, because plump and well rounded, is therefore shapeless. Attention has been called to the proper shape of the shoe by various writers, and has awakened the interest of many mothers, but not of many shoemakers. Shoes are constantly seen which are clearly clamping the baby's toes, with the unnatural result of producing ingrowing toe-nails and the like. In the effort to incite needed reform in this direction the author has made a number of foot-tracings of children of different ages. They were prepared by painting the sole with a mixture of lampblack, turpentine, and sweet-oil, and then pressing it upon a piece of blotting paper. These show that the child's foot at a very early age is of the same shape as the adult's. The conclusion naturally drawn is that the earliest shoes should be rights and lefts, and made to fit the feet.

Sanitary Science.

At a test-examination for sanitary inspectors, one of the candidates, when asked what a death-rate was, replied that it was a rate levied on the living to support the cemeteries. There is a weird sarcasm in this answer, and also in the reply to the question about the wilful exposure of a person suffering from an infectious

disease. "He must not," said the examinee, "ride in any conveyance, except a hearse, without first informing the driver." Another reply to the same question laid it down as imperative that "a person dying of an infectious disease must give notice to the local authority within twenty-four hours." A candidate who evidently thought drastic measures should be employed in cases of infectious disease, said that "members of a family where small-pox has broken out must be sent to a hospital and well boiled." Another mildly remarked that "among the precautions against small-pox vaccination might be looked for." In answer to some physiological questions, one examinee asserted that nitrogeous foods built up the "waist" of the body, and that "milk is the best food for children because it does not require any chewing." Another candidate gave the following elaborate and curious reply to some questions with regard to clothing: "In hot countries the perspiration which is in the skin is evaporated into steam, which goes up to form clouds, and comes down in the form of rain." Sometimes the answers are most illogically "mixed," as in the case of one which stated "that it would be necessary to get an order from the sheriff to seize and destroy the medical officer of health," and in another which affirmed that "many articles of food have to be adulterated to keep them pure."—*Bristol Medico-Chirurgical Journal*.

Stuttering.

Dr. Coleman thinks that this defect of speech, so annoying and apparently so beyond a person's control, is in fact very easily remedied, only requiring patience, practice, ordinary intelligence, a knowledge of certain physiological facts, and a careful observance of their action. For the production of perfect speech, three factors, each governing its own set of muscles, and all supplied by the same nerve-energy, must be set in motion simultaneously. These three factors are: the respiratory apparatus, to supply the wind needed for the production of sound; the larynx, converting the blast into definite sound; and the musculature of the tongue, lips, and palate, converting sound into articulate words. If these factors are brought into action simultaneously with adequate force, the result is normal voice and speech. If the nervous energy is irregular, the harmony between the three factors is broken, and stuttering is the result. Stuttering might then be defined as a

nervous or nervo-muscular abnormality. To conquer this lack of harmony in the three factors, and make them perform their work in perfect unison, Dr. Coleman tells us the chest should be well filled with air before any attempt is made to speak, and deliberately refilled and kept full as long as speech is continued. If the chest is weak, expand it by proper exercise. Always speak in a clear and resonant voice. Mumbling, whispering, and low speech are great incentives to stuttering. When these few rules are learned, and practised with the utmost care day after day and week after week, until the supply of nerve-energy to all the factors is simultaneous, success will be certain, requiring no further effort.—*Medical News*.

Noise and Civilization.

Is there any good reason why, as we trot along to keep up with the march of human progress, we should make so much noise about it? Is it an absolute necessity that the advance of civilization should be accompanied by an ever-increasing volume of din? The husbandman in his quiet home, accustomed only to the crowing of the cock at morn and the croaking of the frog at night, gets his weekly papers and learns of the wonderful things that are being done in every branch of human industry; and he may be pardoned if it occurs to him that it's all being done without any particular fuss. But if he gets into any "centre of civilization" he is appalled by the prevalence of ear-splitting sounds. He may expect a reasonable amount of the "roar of a great city," but in these days the "roar" suggests a well-warranted theory that Bedlam has at last broken loose and can't be corralled. The question naturally presents itself, whether mere unadulterated noise has not been allowed to get the better of us while we have been attending to other matters, and whether it is not about time to direct our energies towards keeping down the uproar that arises on every hand? Certain it is that if the race continues making progress in the next century at the rate at which it has been advancing in the century about to close, and if the noise that arises from the operation increases in like proportion, the human ear will have to be reconstructed on stronger and more resisting lines, and human nerves will need reinforcement in one way or another.

If any one has the temerity to combat the proposition that

noise is getting the whip-hand of us, so to speak, let him rise some morning when this city [New York], for example, is comparatively quiet, and then note how the noise begins, increases, swells up everywhere, until it seems as if the world were made for it and nothing else. A multitude of whistles begin to screech in what appears to be a never-ending contest for supremacy in the realm of noise. The thunder of monstrous trucks that pour along the thoroughfares piles on the agony. An army of leathern-lunged hucksters take possession of the streets and fill the air with indescribable and unintelligible sounds, that are repeated with unabated fervor forty times or more before each house, as if it were to be presumed that the whole population was stone deaf. Ponderous wagons laden with long metal beams move slowly along, giving a blood-curdling addition to the tumult, as beams beat an incessant tattoo on other beams,—altogether the most useless noise in the world. Get on a cable car, especially on an east side line, and as it comes to a stop note the fact that all the grinding, crunching, shrieking noises that have arisen since the world began are concentrated in one mighty effort to wake up the dead.

So the query again presents itself,—Has there, with the increase of civilization and developments in all branches of human activity, been enough attention paid to keeping down and minimizing the resultant sounds? Apparently not. The man who should do something to save ears and nerves would be hailed as a benefactor of the human race. And those who would win fame in the line should make a start before noise has overwhelmed mankind.—*New York Tribune*.

Incorrect Traditions.

Fallacies and traditions are hard to live down. It is a popular idea that it is better for children to have the so-called children's diseases and be over with them; it is also claimed that when adults have diseases which usually occur during childhood, the attacks are much more severe than if these had come to them as children. These statements have always been accepted as facts and passed down from parent to child; but they are not borne out by modern ideas of preventive medicine. In all cases try to avoid disease of every form; keep children from all children's diseases. These ailments not only go hard with many, but the after-effects in some cases never disappear.—*Popular Health Magazine*.

Legislation on Marriage.

Not long since we were consulted by an agent of some society which was trying to promote legislation of such a nature as would establish a medical examination as a qualification for matrimony. They allege that we, as a community, ought to be just as careful about the breeding of children as we are in breeding cattle and other domestic animals, and that as we make artificial selection in raising beautiful flowers, so ought we to endeavor thus to improve the physical and moral characteristics of the race. That the diseased and deformed, and the various subjects of hereditary defects, ought to be prevented by law from marrying. Thus would physical, mental, and moral weakness be eradicated and all of us become fine-feathered birds, if this project might only be carried out to the satisfaction of its promoters.

We did not give our signatures to the paper, because we did not feel the need of being selected out in this way. It does not occur to us that the lower animals or the plants have been very much improved in this selection, from the stand-point of the animals and plants themselves. We may have produced animals born to die for our sustenance, which fulfil that destiny a few pounds or a few dollars more satisfactory to ourselves, but we don't see where the benefit to the animal comes in. We have raised flowers certainly more beautiful to the eye, but this has always been at the expense of the powers of nutrition and reproduction.

RIGHTS SHOULD BE RESPECTED.

Animals have no rights which we feel in duty bound to respect, but men have, and they are not afraid to assert them when other men crowd too closely upon them. Any law that would restrict matrimony will only encourage "taking up." For the sake of the morality of the community, marriage should be made easier and should be subsidized rather than taxed, and love and inclination among the young encouraged rather than mercenary motives. If we all followed the Christian doctrine of taking no thought for the morrow we would be a happier race, though there might be fewer immensely wealthy people than at present. Let us make no mistake as to that portion of our race that ought really to be perpetuated. It is unaccountable, but nevertheless true, that mental and moral perfection are not always accompanied by a strong, robust physique, and *vice versa*. Many of our greatest and best men, in history, the men most worthy of imitation, were

weak bodily, and in all probability this very condition led them to affect pursuits in which they thereafter became famous and of great benefit to humanity. Many physically perfect men have ere now brought great sorrow on their fellow-men and led lives by no means a proper example to others.

Restriction upon marriage is not the remedy ; it is not only unwise, but it would be inefficient to satisfy even its promoters. Nothing short of complete eviration and defemination would accomplish their purpose. Who is qualified to sit in judgment in a case like this, and by what standard shall we decide the proper subjects for rejection by the State and those who are worthy to perpetuate the genus homo?—*General Practitioner.*

Celery.

Now that celery is with us, the following will be read with interest :

The common celery is a native of Great Britain. In its wild state it has a strong, disagreeable taste and smell, and is known as smallage. By cultivation it becomes more mild and sweet. It is usually eaten uncooked as a salad herb, or introduced into soups as a flavoring. In its raw state it is difficult of digestion.

Celery from the market may be kept fresh for some time by wrapping the bunches in brown paper, sprinkling them with water, then wrapping them in a damp cloth, and putting in some cool, dark place.

Celery Salad.—Break the stems apart, cut off all green portions, and after washing well put in cold water for an hour or so before serving.

Stewed Celery.—Cut the tender inner parts of celery-heads into pieces about a finger long. The outer and more fibrous stalk may be saved to season soups. Put in a stewpan and add sufficient water to cover ; then cover the pan closely, and set it where it will just simmer for an hour, or until the celery is perfectly tender. When cooked add a pint of rich milk, part cream if you have it, salt to taste, and when boiling, stir in a tablespoonful of flour rubbed smooth in a little milk. Boil up once and serve.

Stewed Celery, No. 2.—Cut the white part of fine heads of celery into small pieces, blanch in boiling water, turn into a colander, and drain. Heat a cup and a half of milk to boiling

in a stewpan; add the celery, and stew gently until tender. Remove the celery with a skimmer, and stir into the milk the beaten yolks of two eggs and one-half cup of cream. Cook until thickened; pour over the celery and serve.

Celery with Tomato Sauce.—Prepare the celery as in the preceding recipe, and cook until tender in a small quantity of boiling water. Drain in a colander, and for three cups of stewed celery prepare a sauce with a pint of stewed tomato, heated to boiling and thickened with a tablespoonful of flour rubbed smooth in a little cold water. If desired, add a half cup of thin cream. Turn over the celery and serve hot.

Celery and Potato Hash.—To three cups of cold boiled or baked potato, chopped rather fine, add one cup of cooked celery, minced. Put into a shallow saucepan with cream enough to moisten well, and salt to season. Heat to boiling, tossing and stirring so that the whole will be heated throughout, and serve hot.—Mrs. E. E. Kellogg, in *Science in the Kitchen*.

The Human Machine.

A recent number of the *Medical News* had an interesting editorial on "The Perfection and the Resources of the Human Machine," which is here reproduced in part:

"In the first place, the lesson that the school-ma'am is so fond of impressing upon the infant mind, 'Man is physically the feeblest of all animals, but by his superior brain he masters all,' is utterly untrue. Man is physically the finest, most dangerous animal in the world. Not a bird or beast or even fish that he can't beat at his own game, if he sets himself about it. The Blackfoot Indian will run down a deer, knife in hand; even the 'tireless wolf' can be overtaken and killed if you can only keep on his trail. The negroes of Mozambique spring right into the water and attack sharks, armed only with a short knife. The Sikh will face a tiger with his short, heavy scimitar, and a thousand tests abundantly demonstrate that civilized man is as much superior to the savage as the latter is to the animals. Club or sword in hand man is a match for the most ferocious beast of prey in a fair, stand-up fight, and the club or its descendant is as much a part of us as our bones or skin; but for it we should never have allowed our teeth and claws to degenerate into such feeble objects. Its use has made us right-handed; right-handed-

ness has specialized the cortex to such a degree that speech was possible, and speech makes thought possible. So that our mental superiority is purely an outgrowth and a part of our muscular superiority. In the language of Tommy Atkins in Kipling's ballad, *homo sapiens* is 'a pore benighted heathen, but a fust-class fitin'-man,' and two-thirds of his virtues, moral, physical, and mental, are the fruits thereof. And yet we talk of him professionally as if he were a clam without a shell.

"In the second place, there is no known organism that can defy the elements as he can. Any zoölogist will tell us that no other mammal and no bird has one-half the geographic range that the human species has. His faithful friend, the dog, will accompany him almost everywhere, but only by having his food, shelter, and even clothing provided for him by the superior species. We speak of being 'as rugged as a bear,' but it takes three distinct species of *Ursus* to keep pace with man from the tropics to the pole. A dozen or more species of deer are required for the same match. Even the domestic animals, when carefully housed and fed by him, are far inferior in toughness, and one of the greatest obstacles to his progress in many regions is the impossibility of finding any beast of burden or milk-giver that will live in the climate with him. The only species that can even enter the lists with him is the blue-winged teal, and he is disqualified at once by the fact that he is the 'very moral' of a fashionable valetudinarian, spending his summers in Labrador and his winters in Florida."

"Much of this faculty is, of course, due to man's power of constructing shelter and clothing for himself, but still more to his world-wide range of food materials. Look at him in the tropics, subsisting on rice and fruits, only sawdust and shavings under his boiler, so to speak; in the Arctic regions, gorging upon seal-meat and whale blubber, firing his engine up to the explosion point. His instinct meets the situation. A Hindoo would look with loathing on the eighteen or twenty pound meal of seal-blubber of the Esquimo, and we carnivora of the temperate zone would hesitate about attacking it. Yet a professional friend of ours has assured us that on a mid-winter trip with dog-sledges near the Alaskan shores of the Arctic Ocean he positively lost all appetite for bread, lean meat, fruit, sugar, etc., and cared for nothing but the unsalted dried salmon and rancid seal-oil which formed the food of both his Esquimo guides and their dogs. A pint of the

latter beverage carried in the uncured skins of the animal, he declared was as refreshing and appetizing after a long day's run as hot coffee with cream. When we remember that the whole party was sleeping out on the ice every night, in a temperature of from 30 to 60 below zero, with no shelter save their reindeer-skin night-bags, and their sleds piled up on the windward side of them, we begin to see the reason for this almost pure hydrocarbon diet. There was not room in the stomach for enough of any other material to furnish heat to keep up the bodily temperature against such fearful odds. But think of the splendid adaptability of the creature! Our respect for the human machine becomes immeasurable. At the other extreme, look at Stanley and his Somalis, laboring forward day after day in heat and fever fog through the jungles of the Congo, everything carried on the heads of the men (no horses, oxen, or even asses could stand the work and the climate), all on a diet of roasted bananas, sugar cane, and green corn.

"The same toughness and faculty of adjustment manifest themselves even more strongly when we come to consider the unfavorable environment in which man places himself in the various occupations of civilized life and the strain of city surroundings. Scarcely a trade or occupation can be mentioned in which most of those engaged in it are not vigorous, healthy, and long-lived. We speak of 'occupation diseases;' it is true there are such, but none of them ever affects more than a small percentage of those engaged. Even when they occur they are symptoms of lowered vitality, either local or general, on the part of the sufferer, in most cases. Many of them can be avoided entirely by cleanliness and observance of the ordinary laws of health."—*Sanitary Inspector*.

Germ in Condensed Milk.

The general supposition that condensed milk is sterilized milk is by no means correct. There is certainly great difference in the products of different manufacturers. Condensed milk often contains microbes, which, if actively growing in the milk, are ready to grow when the milk is diluted and taken in the stomach. When the condensed milk is slimy, cheesy, or semisolid in character, it contains germs which are actively developing. These germs are from the sources which ordinarily contribute to the

contamination of milk. The only safe way in the use of condensed milk is to sterilize by the same methods employed for sterilizing fresh milk. As a rule, condensed milk requires sterilization as well as ordinary milk, although it must be said that generally there are fewer microbes to be found in condensed milk than in fresh milk as furnished by the milkmen.—*Good Health.*

On Laughter.

Don't forget to laugh. Laugh when you are happy, laugh when you are amused, laugh at yourself for being miserable, and laugh at yourself for being bored. There is always something to laugh at, and even when one is reduced to laughing at oneself, that is very much better than to be "glum."

This is what laughter does for a woman: It keeps her heart young. It makes her like people for the sake of the pleasure they give her, and they in turn like her. It makes her steps buoyant. It keeps her eyes bright. It keeps her face from wrinkling. It is a beautifier second to no other one. It does for the muscles of the face what exercise does for those of the body,—keeps them supple and prevents them from falling into those stiff and settled lines which mean old age.

There is no situation in life except, of course, the inevitable tragic moments that may not be bettered by laughter. It is hard to burlesque one's griefs and annoyances, but it can be done, and it is worth doing. To travesty one's emotions and to make a mockery of one's annoyances may not seem to be the highest form of philosophy, but it is not so low a one as to fret over trials and grow pessimistic over personal woes.

Long-Lived Americans.

This Western Hemisphere has many sorts of climate, but they all have in common this encouragement, in exceptional cases it is true, to great age. It has been supposed that the exceedingly variable and violent climate of some regions of our country is hostile to long life. But if we study the matter in view of multitudes of instances, we see that it is not climate, or even hardship, that shortens life in the United States, for instance, but that it is worry and care, or, in other words, the furious pace at which we

try to live. No attempt is made to defend the climate of New England, and yet the number of people who have attained a great age in it is positive proof that the climate is not altogether in fault for mortality. It is probable that the record would be very different if we paid as much unworried attention to growing old as we have to fighting Indians, subduing forests, making money, and getting ahead of our neighbors. We are still as a nation very young, some physical conditions have been against us, and there has not yet been time enough to spare to show what the country can do for us in the way of longevity. In New England there are less than three lives from the landing of the Pilgrims. Among the Pilgrim records at Plymouth is a letter from Peregrine White, who was born on the "Mayflower" when it lay in Provincetown,—the first white child born in New England. Following that is a letter from an estimable Pilgrim deacon, who lived to be one hundred and six years old, and who testifies that he knew Peregrine White. Following this is a letter from a lady still living, at the age of ninety-two, who says that she remembers the aged deacon of one hundred and six years. Thus less than three lives takes us back to the landing and to the Rock, which is almost as mysterious as the aerolite, or black stone, in the Kaaba at Mecca, since it is like no other piece of granite on the Massachusetts coast. It may be mortifying to see that we as a nation have no greater antiquity than this, but the efforts of three persons to cover it is encouraging.

But it is in other regions of the continent that we must at present look for the extraordinary capacity of the New World for producing old people. Well authenticated are cases of mission Indians in Southern California who reached the ages of 120, 130, and 140 years. In that equable region all the great functions of nature go on with regularity, so as to induce a long running of the machine. But besides this, these old men were probably free from care, from religious doubts and scepticism, and political worry and ambition, and it is testified that they were simple in their habits, temperate, and even abstemious, drinking only water and eating little but corn, which they fitted for digestion by the vigorous action of their own grinders. Lieutenant Gibbons found in a village in Peru 100 persons over the age of 100, and either he or another credible explorer there reports another man aged 140. He was a very temperate man, ate his food cold, and never ate meat except in the middle of the day. In the highlands of South

America the habit of old age is a long-established one. In Ecuador centenarians are common. The census of 1864 found in the town of Pilaguin, 11,000 feet above sea-level, about 2000 inhabitants, among whom were 100 over 70 years of age, 30 about 80, 11 over 90, 5 over 100, and 1 who was 115. Not many years ago there died in Ambato a woman named N. Cucalou, who was 114, and one, Don Jose Sota, aged 120. In the year 1840, in the town of Banos, died old Morales, a vigorous carpenter to the end of his life, who was well on in years and the steward of the Jesuits when they were expelled from their property in 1767. In 1838 a witness in a judicial trial was proved to be 140 years old, having been born on the night of the great earthquake which destroyed the old town of Ambato, in 1698. How much longer this man lived who was cradled by an earthquake, is not yet reported. Mexico, notwithstanding its revolutions, is equally favorable to longevity. In the State of Vera Cruz there died a man in 1893 who was 137 years old. That he was carried off prematurely we have reason to suppose, for at Teluca, where the register is officially and carefully kept, there died only a few years ago a man aged 192.—*Harper's Magazine*.

The Last Stage of a Drunkard.

Dr. J. Milner Fothergill thus describes it: "The most pronounced product of alcoholic demoralization is found in the hopeless drunkard, who, in squalid rags, with rotten tissues, the embodiment of intellectual and moral degradation, utterly beyond hope, the line of possible restoration long passed, hangs around the tavern door, and with odor of alcohol floating on his breath, whiningly begs a copper from the mass of vitality around him, of which he himself is a withered and decaying branch. This man is incapable of labor; he is unwilling to entertain the idea of toil. He is beyond any capacity for work; he is no longer capable of discharging his duty as a citizen; he is a social parasite of the lowest and foulest order, as useless as a tape-worm. He has abandoned all self-respect, because there is nothing left in him for himself or any one else to respect. He is a shameless liar, who will make the most solemn protestations as to the truth of what is patent enough is false. There is no depth of moral degradation to which he will not descend for means to purchase a little more of the fluid which has ever been his bane."

For the Housewife.

For the careful housewife who is always on the lookout for hints regarding the proper care of her possessions, the "pointers" picked up here and there may be somewhat helpful.

For instance, a notable housewife, who always keeps everything in the traditional "spic and span" order, tells one that the best way to restore ivory to its former whiteness, when not stained, is to rub it with powdered burnt pumice-stone and water and place it under the sun's rays.

To polish ivory, first smooth the surface with the finest sand-paper, then apply whiting on a bit of flannel, rubbing it well. The whiting may be wet with oil or water. Finish by rubbing the ivory with a bit of slightly oiled linen cloth. Ormolu may be cleaned with ammonia or spirits of wine.

Leather chair seats may be brightened and revived by rubbing them with the white of an egg. Leather bookbindings can also be improved by the same treatment. The transformation brought about by the application of ink and the white of an egg to a black leather shopping-bag tempts one to mention the fact, for possibly some "new woman" is balancing the pros and cons of discarding a favorite bag which has seen its best days.

Don't throw it away, instead, mix some ink with white of egg in a saucer and give the bag one or two coats of it,—just as you would polish your boots with liquid dressing,—and if your experience is similar to mine, you will never regret the operation, nor will you be obliged to buy a new bag for a long time.—*Waverly Magazine.*

Improving an Opportunity.

It is easy to despise small things, but by no means wise to do so. A Connecticut farmer found a very small potato in one of his pockets when he came in from his work. "Here," he said laughingly to a boy, 12 years old, who lived with him, "plant that, and you shall have all you can raise from it till you are of age." The bright boy cut the potato into as many pieces as there were "eyes" in it, and planted it. In the autumn he dug and laid by the increase of it, and planted that in the following spring. Next year he planted the larger crop gathered the autumn before. The potatoes grew healthy and did well, and his fourth year's harvest amounted to 400 bushels. The farmer asked to be relieved from his bargain, for he saw that the boy's planting would cover all his land.

She will Make a Hardy Czarina.

A letter received here from St. Petersburg says that the Czarina, who gave birth to her first child, a daughter, subsequently named Olga, on November 15, insists upon nourishing the baby Grand Duchess herself, contrary to all court traditions; and the small army of wet-nurse candidates from all parts of the Russian empire who had moved upon the capital in anticipation of the honor of having one of its number selected as foster-mother for the daughter of the Czar and Czarina were sent home. The disappointed nurses, who were summoned to St. Petersburg by the court physicians, were informed, it appears, that brunettes were preferred; that no candidate was to be the mother of fewer than two or more than four children. Incidentally it is added that the determination of the Czarina to nurse her daughter herself is likely to make her even more popular than she is now among the women of Russia.

The Omnivorous Child.

Did you ever see a parent on a journey of any distance whatsoever, from an every-day horse-car ride to a jaunt across the continent, or the great Atlantic, who did not begin to feed the child with him or her as soon as the boat or train or car started, and keep up the stuffing process till you, in your misery, passed out of sight? Hardly ever. The children cry for things to eat,—of course they do. They have been brought up, far as they have got, that way. The minute a child opens its mouth something is stuffed into it to eat. Now this is all wrong. Nine-tenths of the children old enough to take on a journey of any kind are restless not because they are hungry, but because they are confined in a little space and obliged to sit unwontedly still. Amuse them, not by stuffing them with food they don't need and should not be obliged to try to digest, but with something to look at. Instead of opening a bag of eatables every time a child squirms, give him a picture-book or tell him a story. The perpetual luncheon notion that all mothers and many fathers are affected by, and nearly all children afflicted with, the minute they leave their own home, is downright cruelty to children. It is not mistaken kindness at all; it is egregious selfishness on the part of the parents, who take the easiest method of keeping the children quiet by stuffing them with things an ostrich couldn't digest.

Conquest of Moments.

If you would make the best use of your time, look after the minutes. Keep a strict account of every hour of your time for a single week, setting down the exact manner in which every hour is spent, and see whether, when you come to review the record, you do not find it full of admonition and instruction. In this simple way one can readily understand the secret of his want of time. He will discover that he has given hours to idle talk, to indolence, and to inconsiderable trifles, which have yielded him neither profit nor pleasure. What is the remedy? Arrange your work in the order of comparative importance. Attend first to the things which are essential to be done, and let the unessentials take their turn afterwards. The difference in the amount of work accomplished will be astonishing.

Sexual Neurasthenia.

In the course of an able paper, which appears in the November issue of the *Medical Sentinel*, Dr. David H. Rand, of Portland, Oregon, late secretary of the Genito-Urinary Section of the American Medical Association, etc., says,—

“In many of these sexual troubles, particularly where there is a nervous phase, the strictest attention must be given to the general condition of the patient. The bowels must be kept open and toned up, and good nutritious food administered. Some one of the artificial foods may be used with advantage, and I am especially well pleased with the new product, paskola. It has given me great satisfaction where used in many cases.”

We earnestly recommend that physicians who have not tried this article take advantage of the manufacturers' liberal offer which appears elsewhere in our pages.

The Majesty of Trifles.

The course of life is a thousand trifles, then some crises, and again a thousand trifles and a crisis nothing but green leaves under common sun and shadow, and then a storm or a rare June day. And far more than the storm or the perfect day the common sun and the common shadow do to make the autumn rich. It is the “every days” that count. They must be made to tell, or the years have failed.—WILLIAM C. GANNETT.

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COMMUNICATIONS.

The Problem of Work.

BY E. C. BAILEY, C.E., M.D.,
Yardley, Pa.

TO most people, material success in one form or another is the ever-present, all-absorbing subject of thought and object of pursuit. Varying widely in degree from that of the common laborer, whose ideal existence is one of an abundance of the bare necessities of life, and an occasional outing for himself and family, to that of the man of millions, continually striving to add another unit to the seventh of the imposing array of figures representing his possessions, the ambition is essentially one and the same. "How can I increase my income?" is the well-nigh universally self-pro pounded query. It does not by any means necessarily imply a wish for wealth *per se*; but, fortune once acquired, other things coveted may be had for the asking. Leisure for travel, study, or hobby riding; collection of works of art, rare books, or curios; gratification of refined tastes, philanthropic desires, or longings for social or political honors,—all such opportunities follow the advent of riches as the night the day. The problem of life has success for its reward, and men toil, accept the most perilous risks, fight, and die in the attempt to solve it, each in his own way. Other things being equal, the measure of success is the measure of the productive capacity or coefficient of energy of the individual,—the measure of the ability to do, to accomplish, to win, and to hold. The problem of life is the problem of work.

From the worker's point of view, the human body is simply a machine for the production and expenditure of power. Force is generated in the living cell at the expense of its own perfection, the integrity of the protoplasm thus destroyed being restored by the accession of new material prepared by the action of certain ferments upon ingested food. In this process the circulation performs the duties of a common carrier, not only distributing the pabulum wherever it is required, but removing the *débris* of retrograde metamorphosis,—the ashes, so to speak, of the fuel consumed in producing the power expended.

It is more than probable that the normal reconstructive process is continuous; but the natural division of the day into three periods devoted to labor, rest and recreation, and sleep, respectively, indicates that the bulk of the work is intermittent. Twenty-four hours constitute a complete cycle, during which protoplasm is consumed—*i.e.*, converted into power—and renewed. The healthy individual of good habits rises at morn, refreshed and reinvigorated, rejoicing as a strong man to run a race.

To complete the work of repair within the allotted time, all functional activity on the part of the depleted cells must cease. The perfection of human effort depends upon two conditions,—*viz.*, the presence of an ample supply of properly-prepared tissue pabulum, and an unrestricted opportunity to accomplish the purpose for which the reparative material is intended. From a purely physiological stand point, the invocation of welcome oft quoted by the hospitable host at the beginning of the feast, should read, "Let good digestion wait on appetite, sleep on satiety, and health on all!"

Modern methods of business are exacting in the extreme. The demand is for more work, greater productive capacity, increased coefficient of individual energy. "Hurry" is literally the order of the day, and its synonyme, "hustle," is rapidly passing from the domain of slang into the realm of colloquial legitimacy. Ships are built to outstrip the wind; railroad service is popular in proportion to the speed attained; and the work of two days is being compressed into one whenever possible. Compared with even a quarter of a century ago, competition is keener; the rates of interest and profit are lower, and a much larger sum of money must be won and invested before the possessor may retire to live in luxury upon its returns; and the occasional phenomenal suc.

cesses in speculative ventures stimulate the less favored to an undue exertion to acquire wealth in early middle life, that ample time may be had in which to enjoy it while health and vigor yet remain. The world of action moves at the pace that kills. The riches men covet have wings to elude the grasp as well as escape from the hand ; and in the rapid march of the vast army engaged in their pursuit, many there be that faint and fall out by the way, exhausted, crippled, or killed in the futile endeavors to be found in the van.

Speed can never be obtained save at the expense of power. The cost of running a locomotive sixty miles an hour is far greater than twice that of one-half the rate, the ratio of the one to the other increasing with every mile added. The factor of friction, atmospheric and mechanical, follows the same rule. Power is diverted from the wheels and expended in forced draft, and overcoming the inertia of masses and particles compelled to move rapidly and change the direction of their motion in an incredibly short space of time. In fact, high rates of speed are opposed by all properties of matter, and attained only by the most prodigal waste of power and a high degree of wear and tear of the mechanism.

The same law obtains in vital dynamics. A rapid pace entails the consumption of an enormous amount of expensive material compared with the value of resulting products. The digestion must be pushed to the utmost limit of its capacity, and the most painstaking care exercised to preserve the equilibrium of health, in order to reduce the cost to the minimum, and even then it is disproportionately great. The pugilist displays his wisdom when preparing for a contest in which the cheapest of all vital products, brute force, is to be expended, by submitting to the judgment of an expert. The whole routine of his daily life is made to conform to hygienic rules. Food of the best quality is deliberately consumed at regular hours. Exercise is taken with the sole idea of conserving and increasing bodily strength. Every muscle is carefully trained to the highest point of perfection, stimulants are absolutely interdicted, and an abundance of time set apart for rest and sleep.

But the parallel between the steam-engine and the human body, considered as generators of force, ends as soon as the fuel supplied becomes inadequate. In the one case the power produced at a given moment of time is directly dependent upon the

fuel converted into heat a few seconds previously. Once the temperature of the boiler fails, the motion quickly declines, and shortly ceases. In the other case, however, the palpable effect of the withdrawal or marked diminution of the quantity of food is not immediate. The coefficient of energy, which represents the productive capacity when outgo does not exceed income, seldom shows the deprivation at once,—to all appearances it may be preserved intact for a long period. The protoplasm of tissue cells is endowed with what may be termed “reserve power,” the measure of which varies with the individual; and, although the nutritive supply be deficient, the usual requisitions may be honored in full, the shortage being made good by a draft upon the surplus. The “reserve” may not inaptly be likened to the fund that the prudent financier puts aside to provide for emergencies. Kept separate from the capital and increased at every opportunity, it is an anchor to windward; and should a panic threaten danger or enormous demands upon his resources seem inevitable, the far-sighted man of affairs thus secured need have no thought of the morrow. Compelled by necessity to draw upon it in order to avert disaster, as soon as the tide turns and the currents of business return to the usual channels, he makes it his first duty to replenish the store and renew what the civil engineer would call his “factor of safety.”

The value placed upon an article by its owner is generally determined by the cost of obtaining it. Inherited fortune is rarely appreciated; and, if won by the turn of a wheel or a sudden change in the price of stocks, the money is too often squandered. The competency obtained by piling one hard-earned dollar upon another, however, is held in high esteem and carefully conserved, no odds how great the resulting hoard becomes. The spirit displayed by the recipients when accepting gratuitous aid, and the manner in which it is utilized, frequently cause the charitable to question the advisability of the work. The most precious of all sources of power, the protoplasm of human tissue cells, is an inheritance, and, because its nature is that of a gift, is seldom regarded as worthy of consideration so long as it continues to furnish the energy demanded. The pace is set and must be kept up at any cost. To fall behind is certain failure. Others hold out and must not be permitted to forge ahead for lack of effort. Hurry and worry draw heavily upon the vital powers. The hours allotted to labor are too few, and those of rest and

sleep are diminished. The coefficient of energy begins to fail and the reserve is depleted a little each day, and at length the draft is returned with the appalling comment, "no funds."

The downward tendency of our highly-specialized civilization is often overlooked or ignored. The optimist enunciating his platform, "points with pride" at the increased longevity of the race, and claims the ability to refute any statement of the sort by means of deductions drawn from ream after ream of statistics; but the evidence thus obtained is far from conclusive. Longevity is not by any means the touchstone of value. Many of those who attain great age have lived the life of the lilies of the field, and others of the same class have never been capable of much exertion from the period of childhood to that of the "lean and slippered pantaloons." The test must be applied to the coefficient of energy of the individual worker. True, man's inventive genius has augmented the amount of the finished product *per capita*, and, superficially viewed, seems to have enhanced the value of each one's labor. But the real worth of what is accomplished is not and cannot be accurately determined in every case, while business and social conditions remain as they are to day. The great centres of population are powerful magnets, attracting and holding multitudes fascinated with exciting variety and dazzled by glittering show; and for this reason the price of human protoplasm has been cheapened,—it has at times been a veritable drug in the market, so large the supply and relatively small the demand. So long as the individual's coefficient of energy is preserved, the value of the finished product may be computed in dollars and cents; but when the reserve is depleted, there are no figures with which to represent the cost. The material destroyed in the work is invaluable,—its price is above rubies.

The downward tendency is, from the very nature of things, most notable in the localities where the call for speed and power is at the maximum. It is a recognized fact that the hosts gathering daily in the bourses, exchanges, and markets of large cities, would soon be materially lessened in number were it not that their ranks are continually receiving accessions from without. The family of the wealthy, self-made man of trade or finance seldom contributes a recruit of sufficient ability and energy to make him the worthy successor of the veteran head of the firm. The name of the house may remain indefinitely after the retirement of its founder, but the management usually passes into other hands.

The merchant prince of to-day is, as a rule, of humble origin, more often born and reared in the country, where hygienic surroundings and regular habits of life promote the development of the vigorous, robust frame so essential an element of victory in the battle that is to the strong. It seems to be a well-nigh inexorable law of nature that the line of him who wanders far from her simple environments and forsakes her pleasant ways is marked for early decline or speedy extinction; while the rewards and blessings of the highest degree of physical perfection are bestowed in full measure upon the children content to remain amid the conditions found in intimate companionship with the works of her own creative hand. Antæus still lives, and good Mother Earth continues to renew his strength so long as he habitually returns to her breast; but once permanently removed from contact with the original source of his power, the energy expended without stint in the contest with the untiring foe is not restored, and he falls a victim to the grip of the modern strangler.

The pathological aspect of the problem of work is that presented by the effect of the methods and habits in vogue to-day upon the individual coefficient of energy, the perfection and preservation of which, as before stated, depend upon two factors,—viz., an ample supply of tissue pabulum, properly prepared, and an unrestricted opportunity to accomplish the purpose for which the reparative material is intended. Further inquiry is naturally divided into a consideration of the condition and adequacy of modern digestion and rest and sleep.

We are a nation of dyspeptics. Not that we are, one and all of us, the victims of serious disease of the sort, but that there exists in the average individual a condition of impaired nutritive power, an inability to thoroughly digest and assimilate one or more articles or classes of food in common use. Functional derangements of this sort are exceedingly common, and American gout is a well-defined species of the *genus podagra*. So far as medical and dental experiences and observations go, the deteriorating process is still active,—the tendency is downward.

Again the statements oppose the views of the enthusiastic optimist who is fond of congratulating himself and the world that man is ever rising in all respects to higher planes of thinking and of living, and that whatever evils spring up as the race advances are and must necessarily be but temporary, soon to disappear before the flaming sword of ever-increasing virtue or the influence of greater scientific knowledge.

Unfortunately, theory and facts, however well they may accord in other respects, fail to agree in this. Apart from the general verdict of medicine and dentistry, corroborative evidence of the discrepancy may be found on every hand. The enormous and increasing demand for digestive ferments for self-treatment is a matter of common observation, while tonics, pick-me-ups, and predigested foods are high in the popular favor and sources of large revenue to the producers if not to the retail vendors. True, this is an age of charity and good works. The poorest need not starve, freeze, nor suffer for lack of medical attention, for philanthropy everywhere stretches forth a helping hand. Nevertheless, it can hardly be claimed with a show of reason that the great commercial houses engaged in the manufacture of the articles in question are being run as eleemosynary institutions or for any other purpose than that of making money. The demand must exist in the regular channels of trade or the abundant supply everywhere in sight would not be forthcoming. The public evidently feels the need of such artificial aid or the goods would not find so ready a sale; and the presumption is that they are purchased and consumed for the sole purpose of remedying the ills their reputed virtues are advertised to mitigate or cure. Their use in such vast quantities cannot be explained upon the hypothesis of an approaching millennium of nutritive perfection.

Close attention to the claims of the vocation followed consumes more than one-third of the worker's day. Those who reside at a distance from business centres are prone to postpone rising until the last moment, swallowing the morning meal in haste and hurrying to catch the usual train. The food ingested after the longest period of abstinence in the twenty-four hours is small in quantity and imperfectly masticated, and its digestion is delayed by the effects of the undue exertion immediately following. The condition and result resemble those of the familiar physiological experiment of permitting one of two dogs, simultaneously fed to repletion, to remain at home in quiet and compelling the other to follow the chase as soon as the stomach is filled. Killed at the expiration of a few hours, the process of digestion in the former is found well-nigh completed, while in the latter it has hardly begun. In the office, counting-room, or work-shop the exacting nature of the toiler's duties necessitates the production and continuation of a high rate of speed and the utilization of every moment of time. As a natural consequence, the mid-day

meals are bolted standing and the bowels denied their legitimate rights, the evacuations being put off until a more convenient season.

The character of food and the manner in which it is distributed throughout the twenty-four hours are also open to criticism. The average worker cares little for breakfast, which, theoretically at least, should be the heartiest meal of the three ordinarily consumed. Oatmeal, meat cooked in fat, fried potatoes swimming in grease, bread and butter, and coffee make up the bill of fare of the most vigorous. The rule is, however, that the cravings of the appetite are appeased with the favorite Scotch dish and the baker's product only, the main reliance for the power soon to be expended being placed upon a strong infusion of the fragrant berry. A stimulant replaces food. The lunch, if put up at home, is not always in the best and most palatable condition when taken, and if purchased during the "nooning," is composed of edibles that would sorely try the powers of a normal liver, were they thoroughly masticated and deliberately eaten.

The worst of the story remains to be told. Insufficiently nourished, unnaturally stimulated, and heavily taxed during the day, by the time the worker arrives at his home at night, every atom of protoplasm in his make-up is clamoring for renewal. Tired in mind and body, his appetite is too often abnormally keen at the end of his labors, and having ample leisure in which to satisfy its cravings, he sits down at 7 P.M. to a hot, tempting dinner composed of meat, vegetables, salads, relishes, and rich gravies. To cap the climax, after having eaten his fill of the substantials, a heavy dessert of pudding or pastry is added to the contents of the already over-burdened stomach. Fatigue of brain or muscle cannot exist without a corresponding weariness elsewhere. One member never suffers alone. Bodily exhaustion is attended with mental inactivity. The literary man at the expiration of a long period of continuous professional work is in no condition to enter the lists to contest in a fencing bout or a boxing match, no odds how great his athletic prowess. The digestive organs participate in the general relaxation and torpor of the tired body, and yet are denied the smallest measure of consideration. Filled with material that can be perfectly handled and disposed of only when the tone of the whole system is at par, they are expected to do their work uncomplainingly and prepare an adequate supply of power-producing pabulum for the needs of

the morrow. What wonder that the offender rises in the morning with heavy head, perverted taste, pasty mouth, and furred tongue, feeling less disposed to exertion than when he retired the night before ! What wonder that his eye is dull, his breath foul, his motion sluggish, and his faculties blunted ! At the beginning of a day of hard work, possibly to be found full of trying ordeals to be endured, grave emergencies to be met, or great opportunities to be seized and turned to personal advantage if head be cool and nerve steady, what wonder that he resorts to the matutinal cocktail to whet his appetite and spur his flagging energies !


(TO BE CONTINUED.)

Constipation ; Biliousness ; Piles.

BY JOSEPH F. EDWARDS, A.M., M.D.,

Atlantic City, N. J.

(CONTINUED FROM JANUARY ISSUE.)

“OW are your bowels ; are they regular ?” “ Oh ! yes, doctor, they are pretty fair.” “ Are they opened daily ?” “ Oh, no !” “ How often are they moved ?” “ Well, sometimes every two or three days, and, sometimes, not for a week.”

The foregoing conversation has, I venture to say, repeatedly taken place between every physician in active practice and many of his patients.

It is astonishing, I might say, incomprehensible, nevertheless it is a dismal fact, that, even among intelligent persons, little or no attention is paid to this all-important matter of regular and free evacuations from the bowels. I recall to mind one striking case (that can be paralleled by thousands) of an exceedingly intelligent lady of 60, who told me that she had never, throughout her long life, given a second thought to her bowels ; when she had the inclination to have them moved, if convenient, she would seek the water-closet, if the inclination became manifest at an inconvenient time, it was suppressed by an effort of the will ; if the desire did not manifest itself, well, no matter, she did not care ; and sometimes, she told me, a week or more would elapse without one single evacuation. This lady, whose parents

lived to be 90, died at 64, of Bright's disease. I venture to say, without fear of contradiction, that there are more persons in the world who are costive or constipated (generally through their own fault, or, at least, through want of information on the subject) by a large majority than are regular. I have now under my care a lady who tells me that she frequently passes three weeks without a single evacuation : I set to work to induce regular daily passages, and, although well advanced in years, with her stomach and liver much disordered from this costive habit, the improvement in her appearance and in her general health has been marvellous.

A very striking and instructive case has recently claimed my attention : a gentleman, apparently in good health otherwise, would have fever every afternoon ; in vain were drugs ; daily, daily, for months, would the afternoon fever manifest itself ; his bowels were moved daily, hence suspicion was not directed to them ; but, finally, the obstinate daily rise of temperature caused the bowels to be thought of, as a last possibility. He was given daily, for one week, a dose of laxol, and he passed an almost incredible number of small, hard, fæcal balls ; the afternoon fever disappeared and returned no more. Think well of this case, for it is most instructive ; this man's bowels would have been called regular, because he had a daily evacuation ; but it was incomplete ; each day some little was left behind ; this remnant became hard and dry ; daily, the accumulation was added to, until, finally, this accumulation of hardened, irritating matter, so greatly irritated the delicate mucous lining of the bowels as to give rise to a veritable sympathetic fever.

I have been led to regard regularity and completeness of evacuations from the bowels as one of the most important elements in the preservation of health and the promotion of longevity ; and, on the other hand, costiveness or constipation as one of the most active agents in the production of many of the diseases not dependent upon the presence of a special poison for their origin, and capable of producing such a vitiated and disordered condition of the system, as to nurture and favor the development of diseases even which do require these special poisons.

Therefore have I become firmly convinced that, if human nature thoroughly understood and appreciated the great necessity of regular evacuations, and would practise such simple rules as would secure them, much disease and discomfort would be

avoided, and a better state of general health and longer life would result.

Every good housekeeper knows and appreciates the necessity of periodical house-cleanings. If she does not scrub the floors before laying the carpets in the fall, and wash the paint, she does not consider that she has a pure and clean house. Every maid of all-work has a certain day on which she must sweep the parlor, another for the dining-room, and so on, and every day she must dust all the rooms; windows must be washed and rooms aired. And all this work for what? In order that the house may be cleaned of its impurities.

All large cities vie with each other in perfecting their systems of drainage; and for what? In order that this very dead and decaying organic matter, this waste, of which I have been telling you, may be removed and prevented from contaminating the air that we breathe, the water we drink, and the food that we eat. An intelligent person going to live in the country will seek sloping ground, and high locations are generally considered the healthiest; why? Because, according to natural laws, drainage will be better, and the sloping ground will carry away from the vicinity of the house that dead and decaying matter that your bodies are continually giving off.

Now, does it not seem strange, upon reflection, that intelligent men and women will go to all this trouble and expense to remove deleterious matter from their company, when it has once left their bodies, and yet so many of them will go on from day to day, unconcernedly performing their various duties of life, seemingly ignorant of the fact that an enormous quantity of foul, rotten, and unclean matter is daily accumulating within their bodies, poisoning the very foundation of their lives, and sowing the seeds of disease and premature death; does it not seem incredible? Oh! it is a terrible thing this knowledge of everything but our own bodies.

This trouble of constipation is very frequently contracted by growing children; their parents, before them, have not been taught to value the necessity of regular evacuations, hence they do not impress it upon the children, and so these boys and girls, when, in the midst of play and amusement, the desire to defecate comes upon them, resist it by all the means in their power rather than have their recreation interfered with, and only yield obedience to it when its commands become absolutely irresistible.

Constantly and repeatedly refusing to listen to this voice of nature demanding a purification, a removal of poisonous matter, the sensibility of the bowels finally becomes blunted, and a costive habit is established. Not being taught differently in childhood, they do not consider it injurious, when they grow to maturity, to allow their bowels to remain unopened for days at a time, and they, in turn, neglect this all-important matter in their children.

Dr. Lionel S. Beale, of England, says, in his valuable and practical work on "Slight Ailments," "You will find that people who suffer from habitual constipation and those who have a regular but quantitatively deficient action, complain of certain unpleasant sensations. Although there is no organic disease, and if you examined every part of such person you would not find the least indication of the slightest structural change, the almost constant discomfort many of these people have to endure is really great; and not only so, but various more or less serious conditions may result from habitual constipation. In this way that unpleasant condition known as hypochondriasis in the male, and as a form of hysteria in the female, very often commences. There is even the possibility that a condition bordering upon insanity may be brought about by long-continued improper action of the bowels."

Any one whose bowels have been closed for several days and then has an evacuation cannot help but be struck by the terribly offensive odor of the passage, showing to what an extent putrefaction has taken place. Do you know that the most prolific cause of typhoid fever is emanations, in the shape of foul gases and percolations, from privies and water-closets, these gases being generated by the decomposition of the matter that you have passed from your bowels? Do you also know that typhoid fever is characterized by the presence of small ulcers or running sores in small glands which are located in your bowels?

Does it seem out of place to imagine that the retention of a large quantity of this same rotting material in your bowels, liberating these same poisonous gases, acting on these same little glands, might produce this same typhoid fever, or, at least, a condition very similar to it?

Do you know what "hæmorrhoids" or "piles" are? They are an enlargement, an engorgement with blood, of the small veins in the vicinity of the anus; can you not understand that the presence of a large amount of this poisonous matter in the

lower part of the bowels—matter that *ought* not to be there, and that, consequently, is a foreign body—will so irritate the delicate lining of your bowels (a lining as delicate as that which coats the inside of your mouth and cheeks, with which it is both continuous and identical) as to cause an extra amount of blood to flow into its vessels, and, this costive habit continuing, will eventually produce a chronic engorgement or congestion of these vessels, and you have all the sufferings and tortures of piles as a result of this constipation?

In women, the womb occupies a position directly in front of the bowels, from which it is separated only by a thin membrane; can you not easily perceive how this congestion of the bowels will also have a tendency to cause too much blood to flow into the womb, and to produce an engorgement of it with all its attendant suffering? Again, the womb is movable; it is suspended in the cavity of the abdomen by ligaments or cords, sufficiently stout and strong to keep it in its proper position when the organ is healthy; but suppose this costive habit so irritates the womb as to cause an excessive flow of blood into it; of course, it will be heavier than normal, and its cords being unable to hold it in position, it drops down of its own weight, and we have constipation producing all the misfortunes of falling of the womb.

Still more; this constant irritation in the bowels keeps up a constant excess of blood in the lining membrane thereof, and, ultimately, you will have a chronic inflammation established, which, besides causing much pain and uneasiness in the abdomen, interferes with the proper digestion and absorption of food, hence all the phenomena of nutrition are impeded.

This mass of waste remaining in the bowels undergoes putrefaction, and, being unable to escape in the natural way, some portion of it is re-absorbed by the vessels ramifying over the surface of the bowels, and is carried into the blood, so that this fluid, when going its rounds to nourish the various tissues and organs, carries with it some of this poisonous material, and so poisoned blood gives poisoned nourishment to your various organs and parts. There is a condition of self-poisoning, so to speak, the result of constipation, that is worthy of most serious consideration. This dead organic matter retained in the bowels undergoes a species of putrefactive decomposition, as the result of which poisons are elaborated, and these poisons absorbed from the bowels into the blood are carried everywhere throughout the

body, to not only impair its functional integrity, but to actually predispose to, if not directly to cause, organic disease.

The brain and the stomach can be aptly compared to the two balls or ends of a dumb-bell, while the nervous communication between them may be compared to the shaft, so intimate is the connection which exists between the brain and the stomach through the agency of the nervous system. The bowels, as you now understand, are simply a prolongation of the stomach ; they are most intimately connected with the brain by nerves. A very common cause of convulsions in children is constipation, and the presence of worms in the bowels ; the worms acting as an irritant, a foreign body, precisely the same as a collection of dead and decomposing matter does, will cause an irritation in the bowels, and this irritation, acting through the nerves by what is known to physicians as "*reflex action*," will so irritate the brain as to give rise to many disordered phenomena on its part. Can you not, therefore, understand how easy it will be for constipation to produce those violent headaches to which costive persons are so subject ?

The liver is one of the largest and one of the most important organs in your body. How often do you hear one say, "*I am bilious*." These bilious attacks are caused by the incomplete removal from, and, consequently, a partial retention of, the bile in the blood, where it does not belong. When the liver removes this bile from the blood it stores it up in a small sac or bag, from which it ultimately passes through a small duct or canal into the bowels, into which it empties ; the membrane which lines this duct is continuous with that which lines the bowels. Now, can you not understand how, when this undue retention of waste has caused an inflammation of the bowels, that this inflammation will extend up through this duct and ultimately involve the liver itself ? and let me tell you that neither the liver nor any other organ can properly do its duty if it is in a state of inflammation, if it has too much blood in it.

This temporary engorgement, caused by a temporary constipation, if frequently repeated, will, by degrees, abnormally distend the vessels of the liver ; you will have a condition of chronic inflammation, or engorgement, or too much blood, which, in turn, will cause degeneration and disease of the structure of the liver itself ; so you have many cases of serious liver-disease induced by constipation.

Of course, I need not tell you that the poisoned blood, which I have demonstrated must result from constipation, will carry some of this poison to all the various parts of the body, and will produce injurious effects on them, thus interfering with the whole function of life.

Let me close the list of ills produced by constipation by telling you that *death* itself may result therefrom. To support this rather startling statement, let me quote the following remarkable case from Dr. Beale's work, already referred to. He says, "Constipation has caused death. I have myself seen such a case. I recollect an old lady who had been bedridden for years, and was, in fact, dying when she came under my observation, whose abdomen had increased to an enormous size. To my great astonishment, when I came to examine it, I found the swelling due to an enormous collection of hard *fæcal* matter. There was no fluid and very little gas, but the whole abdomen (or belly) seemed occupied by a huge mass of hardened *fæces*, I should think amounting in weight to thirty or forty pounds. Unfortunately, I only saw the patient a few hours before death, when she was reduced to the last state of exhaustion, and when it was impossible to interfere. In this case *fæces* had probably been gradually accumulating in the bowels without attracting notice. The patient being bedridden, the circumstance seems to have escaped observation. Probably, if a medical practitioner had been allowed to interfere some six months before, the patient might have been saved. Injections might have been given, and the contents of the bowel thus removed before any harm to it had resulted."

I have now told you enough, I think, to make you fully realize the absolute necessity of free and daily evacuations from the bowels. You will now know, if you did not before, that the evil results of constipation are not confined to the bowels, but ramify throughout the whole organism; indeed, they have no boundary; their field of operation is limited only by the limits of the body itself.

You will probably not read this article unless you are suffering from constipation (in which event the symptoms thereof will be all too familiar to you), or unless you are prudent and sensible enough to desire to avoid the evils incident thereto, in which event, by following the teachings herein set forth, you will never experience these symptoms; hence we will hurry on to that por-

tion of the subject in which you are most interested, and tell you how to secure *natural*, daily, complete evacuations without a resort to drugs.

Perhaps you belong to that great army of persons who only suffer from periodical constipation; if you do, it is your own fault, and I will tell you how to overcome it.

(TO BE CONTINUED.)

Occupation and Longevity.

BY J. M. FRENCH, M.D.,
Milford, Mass.



OCCUPATION is an important factor in longevity, determining, as it does in great measure, the conditions of man's existence. As a general rule, those occupations are most favorable to long life which involve pure air and out-door life, and which furnish abundant exercise and harmonious development for both body and mind; which do not call for overwork, too many hours of labor, worry of mind, or loss of sleep; which allow a reasonable degree of independence, and are sufficiently remunerative to allow those who are engaged in them to enjoy the comforts of life.

The practical effect of occupation upon longevity is shown by a table given in the Massachusetts Registration Report for 1886, covering a period of forty-three years and eight months, showing the average age at death of persons engaged in different employments. Only persons over twenty years of age, whose employments were known, are considered in the table. The whole number of persons included is 238,792, and their average age is 51.87 years. The different occupations are considered separately, and are also grouped in two classes, according to the general nature of the duties performed.

First on the list come cultivators of the earth, or farmers, with an average longevity of 66.37 years, which is nearly twelve years greater than that of any other class. This is what might be expected, as the conditions of farm life approach more nearly to the normal than those of any other occupation. Says Dr. Farr,

the celebrated English registrar-general, "Man is naturally an open-air animal. He is made to work, and the sky is his native covering. So, after taking everything into account, the hunter, the sportsman, and the husbandman, in a cultivated land, are the healthiest of all workmen."

Next in order come active mechanics abroad, with a longevity of 54.52 years. This class includes such occupations as carpenters, masons, millwrights, stone-cutters, and tanners, who work largely out of doors, at active labor, and yet have not the freedom of movement and diversity of employment of the farmer.

Close to these come professional men, with an average age of 52.16 years. This includes ministers, lawyers, doctors, editors, judges, professors, teachers, and some others. Mental activity is an important factor in all these cases. A cultivated mind increases a man's resources, and adds to his enjoyment of life. An active brain and a strong will enable him to resist many depressing influences, endure many ills, and survive many illnesses, which would otherwise prove fatal.

Now come merchants, financiers, and agents, including bankers, booksellers, brokers, clerks and book-keepers, druggists, grocers, manufacturers, etc. The average age of this class is 49.64. They are followed closely by laborers to special trades, who live 49.18 years; active mechanics in shops, bakers, blacksmiths, cabinet-makers, carriage-makers, coopers, machinists, painters, plumbers, wheelwrights, and the like, with a longevity of 48.84 years; and men employed on the ocean, who live on the average 48.74 years.

The gap is a somewhat wider one between these and the next class, inactive mechanics in shops, barbers, bookbinders, cigar-makers, jewellers, operatives, shoemakers, etc., who average 45.54 years. This shows over three years difference between active and inactive employments, and nearly six years between out-door and in-door employments, both being active.

Factors laboring abroad, brakemen, butchers, teamsters, engineers and firemen, peddlers, chimney-sweeps, etc., have but short lives, averaging 39.65 years. Females, constituting the tenth class, and embracing, among others, domestics, dressmakers, milliners, operatives, tailoresses, teachers, and telegraphers, are lowest of all on the list, having an average of only 39.18 years. The explanation of this low figure is doubtless to be found in the fact that so many women marry and give up their employments

as they advance in years,—apparently only those occupations followed by unmarried women are included in the table,—and hence the proportion of young deaths is abnormally great and lowers the average.

The Soil in Its Relation to Disease and Sanitation.¹

BY G. V. POORE, M.D., F.R.C.P. (LONDON),

Physician to University College Hospital; Professor of Clinical Medicine and Medical Jurisprudence, University College, London.



IN dealing with the relation of the earth to disease it behooves us to move with caution, and we shall do well at the outset to admit that there is very little knowledge of the subject which can be regarded as certain. We are in the land of conjectures, surmises, and plausible hypotheses, which, perhaps, are leading on to certain knowledge, but it will be necessary to check the dicta of the laboratories by experience gained outside of them. Such has always been the admirable custom in this country, where the labors of the pure scientist have been checked by that truly excellent staff of workers, the medical inspectors of the Local Government Board, to whom the world at large is more deeply indebted than perhaps it is aware. Before we blame the earth for causing us harm, we must be sure that the facts, or alleged facts, of the bacteriologist are supported by the experience of the practical epidemiologist. Science unchecked by practice will certainly lead us astray in the future as it has done in the past, and just as a "lie which is half a truth is ever the blackest of lies," so a new scientific fact imperfectly understood has potentialities for evil which are unbounded.

If we set aside for the present the question of malaria, which is undoubtedly primarily connected with certain soils, we have very little evidence that any other disease of practical importance is primarily connected with the soil. There appear to be two microbes which are present with tolerable constancy in the upper layers of the soil, which, when applied to a raw surface or injected hypodermically, may cause tetanus and malignant œdema;

¹ From the London Lancet.

but as yet we are without any evidence that either of these diseases can be caused by drinking water which has percolated through the soil or can rise as a miasm from the soil. They concern the surgeon mainly, and from the point of view of epidemiology are unimportant.

Phthisis, or rather death from phthisis, which is not quite the same thing, is said to be more prevalent on damp soils than on dry ones, and it has further been said that the death-rate from this disease has been reduced in certain towns by sewerage. This statement is not universally accepted, and even if it be true it does not necessarily inculcate the soil because damp soils are cold, and patients with phthisis or any chronic lung trouble are very intolerant of cold and damp. It is very generally recognized that phthisis is prevalent in proportion to over-crowding, and that it is conveyed by tuberculous milk or meat seems to be certain as the result of recent experimental work. Any charge against the soil itself is as yet not proven.

Diphtheria has been said to be prevalent on certain soils, but this assertion is now discredited, and we recognize that the great cause of its spread is overcrowding. Its habitat, if it have any, outside the human body is not yet known.

Anthrax, which is due to a spore-bearing organism, can certainly be conveyed to animals browsing on grass soiled by the dung or blood of infected animals. The bacilli seem to die in the carcass of a dead animal within three days after death; and as for spore-formation, the free access of air and a temperature of 70° F. are necessary, it is not likely that this goes on in the earth. Pasteur's assertion that anthrax spores may be brought to the surface by earthworms is discredited by Koch and others. Man, I believe, has never been infected with anthrax except by direct inoculation or, as in the wool-sorter, by inhaling spores from infected wool or hides. Clearly, animals should not be allowed to browse in an infected field, and such fields should, where possible, be ploughed up and converted from pasture into arable land. The danger of burying animals dead of anthrax is considered unworthy of credence by those eminent veterinary authorities, Professor Brown and Professor McFadyean, and the latter has shown that the process of putrefaction is fatal to the virulence of the tissues of the dead animal when these are inoculated into other animals or administered by the mouth.

Enteric fever and cholera bear a close resemblance to each

other in their mode of spread, and they are both recognized in this country as mainly, if not entirely, water-borne diseases. Whether this be absolutely the case in the tropics I will not pause to discuss, because I am ignorant of the conditions of tropical life, but it is known that at present the water-borne theory, as against the air-borne theory, is receiving more and more support in India. That these diseases are produced in most cases by the direct infection of water by the excreta of infected patients is in Europe very generally acknowledged. The cholera epidemics of 1848, 1854, and 1866, and the more recent epidemic at Hamburg, strongly support the water-borne theory of cholera, and the enteric fever epidemics which afford similar evidence in this country have been so numerous that it is unnecessary to particularize. The spread of both these diseases seems to be favored by conditions of filth and overcrowding, and the existence of a filthy and sodden condition of the soil has been often spoken of in connection with them. Nevertheless, there have been very few outbreaks of enteric fever in which the fact that cesspools, sewers, or underground middens have been in direct communication with the sources of water has not been detected. If, as seems highly probable, typhoid fever may be conveyed by sewer-air there is nothing improbable in the suggestion that it can be conveyed by the air of privies or middens in which fæces are allowed to putrefy. That typhoid fever poison can lurk in properly tilled ground seems very unlikely, and I am not aware that such a thing has ever been suggested. Pettenkofer's statement that epidemics of typhoid fever and cholera follow depressions of the ground water may be true for Munich, but it has not been materially supported in this country; and, in Budapesth, Fodor has found that these diseases are more prevalent when the ground water is high. The variations of level in the ground water depend upon such a number of meteorological and other conditions and give rise to so many and different effects that even if Pettenkofer's statement be accepted it would not necessarily point to the earth as the natural habitat of the typhoid fever poison. Professor Lane Notter,¹ in his summing up of this ground-water question, says, "It must, however, be borne in mind that it is not the ground itself which is the cause of the disease, but the impurities in the soil which the varying level of the ground water helps to set in action." Now, no organic impurity can possibly

¹ Parkes's Hygiene, Eighth Edition, p. 10.

reach the soil from the subsoil, which is purely inorganic. Any organic impurity which reaches the ground water must, therefore, come from above and is due in the vast majority of cases to our mismanagement of organic refuse. Dr. Sims Woodhead¹ says that "*the deeper layers of the earth are frequently almost entirely free from micro-organisms, just as is the ground water.*" Of course, if the soil of a city be porous, and if there be a subterranean net-work of sewers interspersed with cesspools, this would (in the high probability that an average proportion of these contrivances leak) constitute a very great danger, but we must not blame the earth because we mismanage it. The earth, be it remembered, is our sole permanent source of wealth, and we must not needlessly quarrel with our bread and butter.

This world would not be habitable were it not for the humus with which its bare rocks are clothed. The humus is the living covering of the skeleton, and its formation has taken ages. The primitive bare rock which has been "weathered" by the changing seasons gets clothed with a growth of lichen. This thin but rough covering entangles stray particles, and thus and by its own decay affords a nidus for a stronger growth. This stronger growth, by chemical action and physical force, works farther into the rock, on which the soaking rains and rending frosts have an increasing effect, and thus, partly by the disruption of the inorganic rock and partly by the increase in ever-growing quantities of vegetable decay, the humus rises, as it were, "on stepping-stones of its dead self" until it is able to afford footing and nourishment for the stately forest-tree, and its fertility finally becomes sufficient to attract the attention of the husbandman. This humus, the loose mainly organic covering of the rocks, is formed, as we have seen, by crumbling rocks from below and by the constant additions of dead organic matter which is deposited upon the surface. These additions of organic matter, be they in the form of dead animals, dead leaves, dung, or what not, become humified, and thus the stock of humus tends steadily to increase. The greater the stock of humus the greater the fertility, and the greater the fertility the greater will be the amount of dead organic matter to increase the stock of humus. The conversion of the dead organic matter into humus is a biological process, and is caused by the animals which live in the humus and is perfected by the growth of fungi. On this account I ventured some years ago to speak of the humus

¹ Bacteria and their Products, p. 394. Walter Scott, 1891.

as the "living earth," and I take it that no more important addition has ever been made to the stock of human knowledge than the recognition that the humus teems with life, and that its fertility and healthiness depend entirely upon biological processes. If the humus be sterilized either by heat or antiseptics it becomes absolutely barren. It was at one time supposed that the fertility of the soil depended mainly upon the process of nitrification, whereby nitrogenous organic matter is converted into soluble nitrates which are absorbed by the roots of plants, and there can be no doubt that these nitrifying organisms are most important. The causes of the fertility of the soil are probably far more complex than we suppose, and I think it may be said that we are as yet only upon the threshold of our knowledge with regard to them.

The phenomenon of "symbiosis," or the living together of chlorophyll-bearing plants with those which have no chlorophyll in so-called symbiotic community where each partner works for its fellow's good as well as its own, is far more common than was supposed. Originally demonstrated in so-called lichens, which really consist of symbioses of fungi and algæ, it was next shown in the papilionaceous leguminosæ, whose nourishment appears to be largely dependent upon so-called bacterial nodules which grow upon their roots, and, according to my observations, more upon the superficial roots than those which run more deeply. In Oliver's¹ edition of "Kerner's Natural History of Plants" will be found an account of symbioses between fungi and big flowering plants in which "the division of labor consists in the fungus mycelium providing the green-leaved phanerogam with water and food-stuffs from the ground whilst receiving in return from its partner such organic compounds as have been produced in the green leaves." "The union of two partners always takes place underground, the absorbent roots of the phanerogam being woven over by the filaments of a mycelium. . . . As the root grows onward the mycelium grows with it, accompanying it like a shadow. . . . The ultimate ramifications of roots of trees 100 years old and the suction roots of 1-year-old seedlings are woven by the mycelial filaments in precisely the same manner." It is stated that many plants only flourish in symbiotic community, and in this fact lies the explanation of the readiness of some plants to grow and flourish from cuttings put in sand, or from seedlings grown in nutritive solutions, while others, in the ab-

¹ Vol. I. p. 249.

sence of the necessary fungi encircling their roots, cannot be made to strike root or flourish in this way. When it is stated that to the latter class belong oaks, beeches, firs, willows, poplars, rhododendrons, and heaths the importance of symbiosis in this world will be readily understood. Now we know why it is that the gardener prizes leaf-mould in spite of its being comparatively poor in nitrogen as compared with guano. Leaf-mould is full of fungi, and in it the plant readily establishes its requisite symbiosis.

This great and astounding fact of symbiosis, of which we have only recently had cognizance, will serve to enforce the steadily-growing opinion that the sphere of the chemist is in all living processes strictly limited. In estimating the value of artificial manures the chemist's dictum is of the greatest value, but his analysis when used to gauge the value of the living humus may be entirely misleading. The chemist has told us again and again that the quantity of nitrogen in humus and in earth-closet soil is, as compared with many artificial manures, comparatively small, and therefore the mistake has been made of regarding human *fæces* and the product of earth-closets as of small manurial value. I believe that such a statement is most misleading, and on this point I claim to speak with no inconsiderable experience. It is known to many of you that for the past ten years I have cultivated a garden of about an acre and a quarter in extent in which the only manure used has been the excremental and other refuse of some twenty cottages with about 100 inhabitants. In August last I invited a party of the British Medical Association to view that garden, and I think that none of my guests on that occasion will refuse to admit that the garden was as full of crops of one kind and another as a garden could well be. Dr. Voelcker, the chemist of the Royal Agricultural Society, whom I had the honor of numbering among my guests on that occasion, told me that he had never seen a piece of ground more fully stocked, and he very kindly went carefully round the garden with me to see if his experienced eye could detect any sign of sickness in the soil. I have never detected any such signs, and neither could he. The garden affords no evidence of being overdone with manure, and my belief is that it would take a great deal more. This ten years' experience has convinced me that human *fæces* constitute a manure of the greatest value, all analyses to the contrary notwithstanding. The probable explanation lies in the fact that the microbes extruded with the *fæces* are of great value in developing the fertility of the humus.

Many recent experiences in sanitation and in medicine force upon us the conclusion that the value of chemical analysis in biological questions is not final. Water which has been found to contain the bacillus of typhoid fever has passed the tests of the chemist, and there can be little doubt that in the past many samples of wholesome water have been condemned for containing the products, in the form of nitrates, of oxidized organic matter. Again, the action of toxins and antitoxins is quite beyond the reach of the chemist, and the marvellous results which have been obtained by administering thyroid extract teach us that in dietetics there is something which the chemist cannot gauge. Raw thyroid and cooked thyroid would give the same results on analysis, but how different is the physiological result. How different is the action of the carefully dried stomach of the calf in the form of rennet or pepsin as compared with a dish of tripe! These facts must force upon us the speculation that the same thing may produce very different effects according to the temperature to which it may have been artificially raised by drying under a vacuum or by cooking, and must drive us to the conclusion that although it may be advisable under certain circumstances to boil our milk or our water, it is possible that the act of cooking may change, we know not to what degree, the physiological action of the milk or water which has been thus treated. My experience tells me that the chemists are wrong when they say that human excreta are of small manurial value. Their analyses are doubtless right, but their conclusions are wrong and very dangerously misleading. In this statement I should be supported by the whole of the "Far Eastern" nations.

The ultimate manurial value of urine is doubtless very great, although when pure or nearly pure it is very deadly to herbage. The only satisfactory way of using urine as a manure is to imitate the farmer by mixing it with an absorbent material such as straw, sawdust, peat, earth, paper, cotton waste, wool waste, etc., placing it upon the surface of the ground and digging or ploughing it in.

The best evidence that the humus is alive is the fact that it breathes. The fungi which are destitute of chlorophyll absorb oxygen and give off carbonic acid, in this respect resembling animals and differing from the chlorophyll-bearing plants. The most easily obtained evidence of this is the fact that decaying refuse generates heat, a fact which is easily ascertained by using

a thermometer. Thus I have at present in the garden of my cottage in the Thames Valley a heap of privet leaves intermixed with a quantity of fine twigs which give it great porosity and serve to admit a large quantity of air. On the morning of October 21 the temperature of the air was 39° F., and the temperature of the heap of leaves was 57° F. (18° F. more than the air). On October 22 there was a heavy cold rain with a cold easterly wind. On the morning of October 23 the temperature of the air was 40° F. and the temperature of the heap of leaves was 56° F. On the night of October 23–24 there was (for the time of year) a very severe frost. My heap of leaves on the morning of the 24th was solidified on the surface by the frost, but the temperature of the interior was 53° F., while that of the air was 30° F. (an increase of 23° F. over the air). This heap, it should be stated, is only a small heap, and would all go into a big wheelbarrow. On the morning of October 24, after taking the temperature of this heap, I turned it over with a fork, putting the frozen top in the centre and altering the position of the constituents of the heap. A quarter of an hour later the temperature of the heap was found to be 32° F., and at seven in the evening it was still at freezing point, or only just above it. The night of October 24–25 was again very frosty, as many as 12° F. of frost having been registered at a house close by. At eight in the morning of the 25th, however, my heap of leaves showed a temperature of 40° F., having risen 8° F. during this very cold night, and being 20° above the minimum cold recorded in the night. At 7 P.M. on the 25th the temperature of the heap was 42° F., and the next morning, after a third very cold and frosty night, it had risen to 45° F. The rise of temperature here was clearly due to the respiration of living things and could not have been in any degree caused by absorption of sun-heat. (Since the above was written autumn has come upon us, and the fallen leaves have been collected into a big heap. On November 15 the temperature of this heap was found to be 62° F., and a week later, November 22, had risen to 104° F.) The fact that the humification of organic matter generates heat is a fact which is of enormous practical value to the gardener and farmer. The market gardens round London, which produce astounding crops and assimilate an enormous quantity of dung, are in a sense extended and mild hot-beds. One hopes that those who are advocating the burning of organic refuse will pause to think, however necessary such a process may be under

certain circumstances, how great is the dispersion of energy which such a process involves and how much heat is lost which might otherwise be used for the stimulation of germination and growth in seeds and plants. One hopes, also, that those who would condemn as foul the humus which contains a large amount of carbonic acid will remember that this gas may only be an evidence of perfectly healthy and vigorous action. The important fact that the tillers of the soil are the most long-lived of all the laboring classes is one which must never be lost sight of.

That the humus breathes and generates an enormous quantity of carbonic acid precisely as an animal does is a fact of which the agriculturist must ever bear in mind. Many of the operations of the farm have for their object the loosening of the soil and the admission of air to enable the respiratory processes to go on. Every farmer will tell you that the earlier he can get upon the ground to hoe his turnips the better will be the crop (other things being equal), and every farmer knows the advantage of thorough tillage. If the respiration of the humus is an important fact, it becomes very important indeed not to drown it. It stands drowning no better than a man does, but, like a man, it requires a requisite amount, but not too much, of drink. There can be no doubt that the failure which is almost general of so-called sewage farming arises through the drowning of the humus; and it must be borne in mind that sewage water consists to a very considerable extent of water which has been boiled, or is hard, deep well-water, and has not the valuable quality of rain-water of containing some 2.5 volumes per cent. of atmospheric air dissolved in it. There can be little doubt that the great trouble to the sewage farmer is the excess of water which drowns the humus. When three or four ounces of excrement are mixed with 1200 times their weight of water they run a small chance of humification, and one must fear that the difficulties of the sewage farmer (financial or agricultural, or both) must increase with the magnificence and extravagance of the water-supply of the town the sanitary interests of which the sewage farm is intended to subserve. The evil effects of too much water have come before me lately in two very striking examples. While going over the experimental farm belonging to Mr. H. C. Stephens, M.P., at Cholderton, on Salisbury Plain, this autumn (which I did in company with a large number of practical agriculturists), there were here and there noticeable in the middle of fields having a uniform


quality of soil, and which had been treated in identical fashions, certain large patches over which the growth of turnips, as compared with the rest of the fields, was very defective. The explanation offered was that on these patches the animals had been folded in wet weather, that the dung had been trodden into the ground, and the soil had been hardened and consolidated by the trampling of the beasts. Under such conditions (air not being adequately admitted to the pores of the soil) the humification of the drug had been hindered and the crops stunted in consequence. This was a fact new to me, who am only an amateur agriculturist, but I may state that it was unanimously and unreservedly accepted as an adequate explanation by all the farmers present, who seemed to be perfectly familiar with the consequences of folding cattle in the wet. On the other hand, the most fertile patch of the whole farm was where the cattle had been folded for a fortnight continuously on the same spot during the severe frost of last winter, and had been fed upon food which was necessarily brought to them on that spot. The ground being as hard as iron could not be more consolidated by trampling, and with the advent of the thaw there was a general disruption of soil and dung, and humification went on rapidly in earth of which the pores had been opened by the beneficent effects of a deep frost, and which had received an amount of dung which was exceptionally great.

(TO BE CONTINUED.)

School Desks.¹

BY E. H. BRADFORD, M.D.,

Boston.

OME years ago a committee was appointed in Boston to look into the question of school desks, and it did most admirable work. Dr. Henry Williams and Dr. David Lincoln served on this committee. A few years ago Dr. C. L. Scudder made a very careful examination of the actual condition of the school seats in our public schools, and showed by means of photographs of different school-rooms that the children were seated not at all according to their height,

¹ From the Boston Medical and Surgical Journal.

but according to the seats that were in the possession of the school-teacher : without any rational method of seating.

The School Committee, however, found itself powerless to remedy the matter, and was able only to make suggestions as to the need of improvement. Dr. F. M. Hartwell has called to my attention the fact that the first impulse towards improvement in school desks and seats started from this country and largely from Massachusetts. At the Vienna Exhibition, Boston's school desks and school seats received a diploma and a great deal of attention. This stimulated several of the German investigators, and since then improvements have been made and several commissions have been appointed to investigate the subject.

It might be advisable to adopt the report of some of these commissions as a standard. We are met, however, with a practical difficulty in the fact that American ingenuity has invented a number of adjustable desks and chairs for the use of schools. In certain localities, certain manufacturers would be able to influence school committees ; the best desk would not be introduced, but the one the local school committee would be persuaded was the best. There is, therefore, need for some scientific statement of the principles that should govern the construction of school desks and school chairs. Such a matter should be looked up more thoroughly even than has been done in Germany, and the results published. Coming from a body of experts, acting at the instigation of a scientific body,—such as the Improvement Society,—the report would command attention.

It is therefore proposed to memorialize the School Committee of Boston to the following effect :

To the School Committee of Boston :

All of your memorialists are citizens of Boston and members of the medical profession. Viewed from the medical stand-point, school life in Boston being a sedentary pursuit followed during the fateful period of growth is necessarily unnatural and artificial at best. Failing the best hygienic and sanitary conditions attainable, in a crowded and still growing city, the school population may easily constitute a serious menace to the public health. The fact that city children are inevitably handicapped somewhat in the struggle for existence by their environment—in which the school constitutes a large and potent factor—emphasizes the need of unremitting care and activity to prevent enfeebling and deteriorating influences from overweighting them altogether. We

gratefully recognize that the School Committee has evinced an interest in the physical welfare of the children under its charge by providing in some measure for their physical training; by co-operating with the Boston Board of Health in the inauguration of a system of daily medical inspection of the schools, in order to limit the spread of infectious diseases; and by measures to improve the character and distribution of school furniture.

The special purpose of this memorial is to urge upon your honorable body the great importance of providing our public schools with properly constructed desks and chairs, and to request that you will take still further action to attain that end. It is our impression that nearly fifty years ago Boston was among the first, possibly the first city in America, to provide individual pupils with a separate desk and separate chair. More recently your honorable body has manifested renewed interest in the matter of school seating. This is shown by the School Committee's appointment, in 1892, of three physicians from among its members to serve as a special committee on the seating of pupils, and by the experimental introduction of adjustable desks and chairs into a new primary school at the instance of the special committee alluded to. The publication of Dr. C. L. Scudder's "Investigation into One of the Etiological Factors in the Production of Lateral Curvature of the Spine; Reasons why the Seating of School Children should Receive very Careful Supervision," or School Document No. 9, 1892; the order of the School Committee directing the supervisors and the directors of physical training to aid and advise teachers in the seating of pupils and to report their observations and suggestions in regard to seating to the School Committee; and the publication of Dr. Hartwell's studies of the seating question, "Reports of the Director of Physical Training,"¹ all appear to be traceable to recommendations emanating from the same special committee.

The European movement for the reform of school seating, which began some thirty years ago, was considerably more influenced in its earlier stages by the force of American example than has latterly been the case. Particularly on the Continent, physiologists, physicians, orthopædic surgeons, and oculists have taken a leading part in the investigation and discussion of the principles of seating, and their results and conclusions have been given practical effect by numerous governmental commissions composed

¹ See School Document No. 8, 1894, and School Document No. 4, 1895.

of medical and mechanical experts. The movement has led not only to a much higher development of the art of constructing adjustable school furniture than can be found among us, but also to other notable reforms, as, for instance, in the construction and lighting of school-rooms, the better printing of text-books, reformed methods of penmanship, and the medical inspection and supervision of schools.

Several ingenious types of adjustable school desks have been put upon the American market by inventive makers within the past few years, and the number of such types is steadily increasing. Opinions in respect to the theoretical merit and the practical value of these new inventions appear to be confused and divided, and there is a good deal of hesitancy on the part of conservative school boards in adopting them for general use. To us this hesitancy seems natural and justifiable in view of the complex nature of the seating problem and the impossibility of solving it out of hand through the rough and ready methods of manufacturing enterprise. Unless and until American inventors and makers of would-be hygienic school desks and seats avail themselves of the lessons to be learned from the failures and successes of their European contemporaries, they are likely to lose time and money in roundabout and crude experiments, the cost of which will naturally be defrayed to some extent from the public purse.

We respectfully submit that the physical welfare of our school children and the interests of our tax-payers and the exigencies of municipal economy would be best subserved in this matter if the deliberate and dispassionate opinion of a body of competent experts were secured and published as to the most important aspect of the school-seating question, and as to the most approved and economical means of settling it.

In view of the general agreement among these physicians and hygienists who have investigated the subject, as to bad eminence of faulty school furniture in producing spinal deformities, muscular weakness, nervous debility, and impaired vision among school children ; in view of the increasingly unsatisfactory nature of the school-seating question in this community, as well as in the country at large ; in view of the fruitful results which have been attained by school-desk commissions in Europe ; and in view of the measures hitherto taken by your honorable body in relation to this matter, we respectfully ask that you supplement those measures by appointing a committee of experts, who shall

serve without pay, to report to the School Committee upon the principles of school seating, together with such recommendations as they shall deem appropriate under the circumstances.

In our judgment it is particularly desirable that such a committee should set forth the essential principles, both medical and mechanical, which are involved in the construction of school desks and chairs, and should make known the results of the most successful attempts to carry these principles into effect ; since an authoritative exposition of principles for the guidance of all makers and buyers of school furniture is utterly lacking and very much needed among us at the present moment.

The publication of such a report by such a committee as we ask for under the auspices of the Boston School Committee could not fail to attract wide attention and to exert a weighty influence upon physicians, school officials, and teachers throughout the country, which has been accustomed hitherto to look to Boston for aid in settling novel and knotty questions in the administration of educational affairs.

School Children's Eyes.—A Plea for the Examination of every Child's Eyes when Commencing to Attend School.¹

BY W. F. SOUTHARD, M.D.,

San Francisco, Cal.



LOOKING over the annual report of the public schools of the city of San Francisco for the year 1893, I find that there was an average daily attendance of 31,002 pupils between the ages of 5 and 17. Of this number 69.63 per cent. were in the primary grades. This includes all children between 5 and 10 years of age ; 26.06 per cent. were pupils in the grammar grades, while but 4.31 per cent. were high-school pupils. These pupils, between say the ages of 10 and 17, were divided between the grammar grade and the high school. I wish to emphasize the point that, though this does not state the total enrolment of pupils, it does very correctly give the daily attendance throughout the year. An analysis of these

¹ From the Journal of the American Medical Association.

figures will give us some very important results. In the first place, you will observe that from the primary grades over one-half, or 50.43 per cent., fail to enter the grammar grades. These children at this time are about 10 years of age. At the close of the grammar grades 71.68 per cent., or more than three-fourths, fail to enter the high school.

Finally, to show more vividly the enormous decrease of school attendance between the tenth and seventeenth years, we learn that there is a total loss of 96 per cent. as between the primary school attendance and the high school attendance. Let us see if we can discover the cause for such a tremendous variation in attendance between the three departments of our public schools. We shall find, I think, that not one only but many circumstances conspire to bring about these results. The average person will be very likely to say that removals, deaths, sickness, and discouragement ought to be a sufficient explanation. I am sure that a more thoughtful examination into the causes will convince us that not only the above mentioned but other reasons exist for such a condition of affairs. To my mind this fact is a cause for greater surprise and alarm than that but 4 per cent. of our primary pupils reach the high school, insignificant as is that number. At the age when pupils enter the high school a very large number are withdrawn to become wage-earners; they must assist in providing for the family. A very large percentage of the parents of these pupils think that completion of the grammar grade is all that their children need to fit them for all ordinary vocations. But this cannot be the case at 10 years of age, for the percentage of permanent bread-winners of 10 or 12 years of age must be very small in this State.

We find on examination—that is, by questioning teachers, superintendents, and those who are daily brought into contact with children—that the number dropping out because of their inability to keep up in their studies must be very large. It is possible that, as we examine this particular cause for loss more carefully, we may discover the very material we are after by which our proposition may be maintained. I have held for some time in my arguments with educators that if curves showing the mental capacity of a thousand children of the same age could be drawn, they would show but a very slight variation one side or the other from a given mean. I believe that we shall find that the brain capacity of our children can be measured with as good

results as we have obtained in other branches of anthropometry, a study which has been brought to a very high degree of accuracy. For example, Professor Bowditch, of Harvard University, Professor Gihon, of Annapolis, and Professor Hitchcock, of Amherst, have together measured some 40,000 persons between the ages of 5 and 25; the design being to show the rate of growth of the body for the different ages. From these measurements a certain mean standard of physical development, height, weight, chest measurement, length of body sitting and standing, etc., to which the great majority nearly attain, has been found. The deviation above or below this mean is found to be about the same.

That there is a tacitly recognized uniformity in brain capacity, powers of comprehension, and general intelligence among children of the same age is proved by the fact that school-books have been prepared, hours of study, and the studies themselves arranged to meet this. We may question the wisdom of making text-books on such a rigid plan; we cannot deny the facts. It follows therefore, very clearly, it seems to me, that very nearly equal results should be attained by the great majority of pupils. If this is not true, then there can be no law governing our intellectual powers. If, then, we find in the same grades at school a very wide departure from the standard, we must conclude either that the general standard is too high or a very large percentage of our children have some disability. Why should so many children become discouraged? Their work is not particularly difficult, their hours are comparatively short, and in the primary grades they are not expected to study at home. Ill health is an important factor; thousands of children are already invalids before going to school; inherited weak constitutions, impoverishment of bodies from deficient or unwholesome food, bad hygienic surroundings at home, all unite to handicap such children in school-work. The stooping forms, eyes bent close to the desk before them, the shuffling walk, the notched teeth, thin faces, and other physical defects are to be seen every day and in every primary school. If we examine this class of children, we find that they have in nearly every case marked deficiency in visual acuteness. We cease to wonder that such pupils cannot compete in the struggle for an education.

There is, again, a large percentage who fall out of the ranks from among the apparently healthiest and brightest children. For a term or two they may have no trouble, but later on they

drop behind, when they in turn become discouraged. We are able to positively state that they have no impoverished bodies, that they have always been well, and have never complained before going to school. As they fall behind their class-mates, they are called mischievous, stupid, and other epithets of like character are bestowed upon them. Many of these children come home every afternoon complaining of headache, or, if they have no headache, they complain of feeling tired, they get listless, and hang about the house. They are being constantly corrected for not paying attention. In fact, one of the most frequent complaints from teachers is that such children never look upon the work before them more than a moment or two at a time. They are being constantly diverted to whatever is going on about them. It is needless to ask what is the outcome of this condition; the teachers get impatient and become constant fault-finders, the child gets discouraged, and the parents in many cases become dissatisfied and remove their children from school. It is among just such material as this that we find the evidences which confirm us in our theory that there can be but one way to treat this whole subject. We find that the very largest proportion of these children have errors of refraction or some disturbance of the visual organ. We find also on looking into the matter more closely that the school environment is not of the best; school-rooms are imperfectly lighted in most every case, the proportion between windows and floor-space is less than the standard. Many rooms are so situated as regards light that they cannot by any means get good direct light. But too often the best light in the school-rooms is a reflected light from some adjoining high building. Such a light is most injurious to the eyes and to the nervous system. Then there is the question of heat and ventilation; serious questions, too. The proper seating of the pupils at their desks, the character of the seats themselves are in too many cases the cause of permanent injury to the growing child. Poorly printed books and poor paper have much to do with strain upon the eyes. Though much has been attempted to remedy some of the most evident of these defects, we cannot but feel that the rights of the child have not been considered when we let contracts for building school-houses. Politics govern our school system, in most places, to too great an extent. We spend money enough to get the very best results; it is, however, becoming evident that enormous sums are most unwisely spent. Each of

these points just mentioned needs more discussion than can be given at this time. Given these imperfect surroundings together with some defect of vision, and we have a combination which must sooner or later be detrimental to the child, physically or mentally. Is it any wonder that he has no concentration?

In pursuing this subject of our public schools a little further, we have to note that in the primary grades there was enrolled at the commencement of the year a number equal to thirty-two and thirty-five-hundredths in excess of the number in regular attendance. They mostly dropped out during the first two or three weeks of school. Such a number of units thrown upon the community unable to read or write must become in time a serious burden upon it. I am most firmly convinced, from personal observation, that poor eyes must be a leading factor in causing this great loss. A law compelling a rigid examination of the eyes of every child when he begins to go to school would seem to be demanded. Let every child come to school bearing a certificate stating the exact condition of its eyes. By such means the teacher will be put in possession of facts which will be of inestimable use to him and to his pupils. A plan so simple ought to commend itself to every physician, to every educator, and to every parent.

Having shown the intimate relationship existing between imperfect eyes and lack of power to apprehend, a long step forward has been taken. Statistics have been made of many thousands of school-children in Europe and America, by a large number of competent observers, during the past twenty years. An examination of these results most clearly shows that there is a most intimate connection between education and defective vision. It has been proved that myopia (that form of defect to which all eyes tend) exists in but 1 per cent. of the primary scholars in country districts. This is due to obvious causes; country children go to school a less number of hours daily, or if they attend, less is expected of them. They also attend a less number of weeks during the year, and they read or study but little at home. An examination of the city schools shows at a glance a different condition of affairs. Myopia is found in these schools in far greater proportion. As we ascend from grade to grade, from primary school to grammar school, from grammar to high school, from high school to colleges and universities, up to the highest institutions of learning, myopia is found ever on the

increase, until in the very highest schools in Germany over 90 per cent. have been found myopic. In other words, it is now an accepted fact that myopia is a product of civilization, one of the results of our modern methods of education. It is not our purpose to discuss these methods in this paper, simply to draw your attention to a fact now generally accepted.

Having shown that there is this relationship between myopia and education, it may be said, But this does not account for the first proposition,—viz., that such a vast percentage of pupils drop out of the ranks at the early age of 10 years. At 10 years of age myopia has been found even at its maximum to be only 10 per cent. Myopia, then, cannot alone be a sufficient cause for so great a loss at so early an age. This is very true, but myopia is not the only error of refraction causing disturbances. It has been very satisfactorily shown that all infants are born hyperopic. We may also assume that a very large percentage are born astigmatic; of these probably 75 per cent. have hyperopic astigmatism. From 5 to 15 years the child's body is developing most rapidly. A greater amount of nutriment is now being taken in proportion to its weight than by adults. Tissue-changes are taking place in a most rapid manner. Physiologists claim that during these years a large part of the twenty-four hours should be given to body-building by means of sleep, food, and exercise. The visceral organs, for example, may be altered by too great and too continuous compression. It needs no philosopher to tell us that we must expect more or less alteration in the shape of the eyeball from too great and too continuous use of the eye at the near point. If we admit that this may take place in the so-called normal or emmetropic eye, how much the more likely are changes liable to follow over-use when the eye is in its undeveloped stage? We know that the ciliary muscle of the hyperopic or undeveloped eye, from its very nature, must be in a constant state of activity during all the waking hours. At the far point as well as the near point the effort is being constantly made to force the rays to a focus upon the retina. This effort means strain, and the strain means disturbance of the nervous system. The effort to maintain visual acuteness by the expenditure of force upon the ciliary muscle is not the whole story. According to the degree of hyperopia there is a change in the angle, "alpha," which means that the attempt to maintain binocular vision must be attended with expenditure of

force, and this often leads to strabismus. This proposition brings us to the point I am to make,—viz., that children's eyes are from their very construction just the sort of eyes which will cause the greatest discomfort from over-exertion. The two factors, the attempt to produce visual acuteness by forcing the ciliary muscle to powerful contractions, and the effort to maintain binocular vision by forcing the extra-ocular muscles, is liable to produce varied and peculiar symptoms upon the nervous system. I assert, then, that those children having hyperopia and hyperopic astigmatism are the real sufferers. Their constantly nagged nervous apparatus tends to become wearied to the extent that they cannot give close attention to the work before them. They must look up often to rest their wearied muscles. Therefore, to expect continuous application and good attention is most unreasonable. That such children may lose interest in their school work on account of the difficulties surrounding them we can readily understand. We could, did space permit, show that these imperfections may have a very marked effect in the development of the child's character.

In my examination of the eyes of the students of the University of California, for the past five years, I found that the percentage of refractive errors was 68 per cent. Of this number only 6 per cent. were myopic. In a detailed analysis of 1300 errors of refraction I have shown that 75 per cent. were hyperopic in some degree. I found in looking over the list of symptoms attending these cases that pain of eyes, headache, muscular spasms, and nervous symptoms generally were confined to this class of cases. The myope but rarely complains of anything more than inability to see at a distance.

It is not to be denied that myopia is greatly to be dreaded; since it cannot be stayed in its progress in many cases, even though corrected with glasses. We are willing to believe that it is the end towards which a vast proportion of eyes tend when overworked. We claim, however, that our sympathies are rather to be directed to the youthful hyperope. Could we but examine every case during the first few years, we would not be sending to our universities young men and women with eyes just ready to break down. The remedy is examination and constant watchfulness. We must bear in mind that the tremendous waste unnecessarily taking place through the effort to work under the disadvantages of a refractive error is not easily measured. Individual

suffering and loss of power to work may cause great material loss. From this cause the community has to be taxed to support asylums; from this cause many eyes tend towards disease and ultimate blindness. These are among the possible results of neglect on our part to do our whole duty. We may build asylums for the blind, we may do everything possible to remedy the defects already existing, yet, unless we go down to the very foundation of the trouble and alter existing causes for disturbance, we shall in time have as great a percentage of spectacled beings as is now seen in Germany. Remember that this is an age of conservation of energies, not waste.

Public Health in Minnesota.

BY CHARLES N. HEWITT, A.M., M.D.,

Secretary of the State Board of Health of Minnesota and Director of the Department of Public Health in the University of Minnesota.



SEND you my scheme for public health instruction in teachers' institutes and summer school. In this department of mine, established in 1873, I lecture first term to freshmen (350 in present class) on personal health, with obligatory notes and written examples. Second term to sophomores on health in family and home, with laboratory instruction in elementary water, air, and food analysis. Third term to juniors and seniors on public health, State, national, and international, and some problems of health in sociology, with higher laboratory work in chemistry, biology, and bacteriology in the every-day work of health for educated men and women.

In this laboratory is abundant material, for we are daily examining and reporting on private and public water-supplies and bacilli of diphtheria and tuberculosis.

So far as possible, this opportunity is used to interest the undergraduate student in public health. Twenty years of experience teach me that there are always some who, becoming sanitary teachers in their homes, often guide popular opinion when we need it in emergency.

PLAN OF INSTRUCTION FOR TEACHERS ATTENDING THE
SCHOOL.

That the student be a teacher for the coming year ; that he will use the information given in the every-day conduct of his school ; that he attend the lectures of the course regularly ; that he devote at least ten hours to laboratory work in air and water analysis ; and that he submit at the end of the course to a written examination to test his knowledge of the subjects taught.

ABSTRACT OF THE COURSE.

Five Lectures.—Time, 10.30 A.M. on Fridays ; place, lecture-room and laboratory of the Department of Public Health, Mechanic Arts building.

(1) *Public Health.*—Its facts and their sources. Methods of study. What it has done. Personal, family, municipal, and national health, sanitary legislation, the citizen's duty.

(2) The essentials in construction and furnishing of school buildings for health, cleanliness, light, heat, ventilation, and furniture. Dust, its character and relation to health and disease.

(3) Methods of air and water analysis available for the teacher,—requiring only the knowledge every teacher ought to have, and such apparatus and chemicals as are easily procured with the least trouble or expense. (These are sufficient to determine whether a sample of air or water is reasonably pure, in a sanitary sense, or should have further examination. In the last case the local or State boards of health will immediately assist, if called upon.)

(4) The common and preventable causes of ill health and sickness to which teachers and pupils in the public schools are exposed. (Microscopic and magic lantern demonstrations, bacteriological cultures, charts, diagrams, etc.)

(5) Working details of teachers' duty in promoting health and forefending or controlling the causes of ill health or sickness ; how children may assist ; the use of boards of health, and how to co-operate with them.

LABORATORY WORK.

Construction and arrangement of apparatus, the preparation of chemicals and their use. Testing of samples of air, water, and dust, chemical and bacteriological. At least ten hours should be devoted to this work. More time can be arranged for if desired.

EXAMINATION FOR CERTIFICATE.

Written, oral, and laboratory examinations and two hours allowed, if need be, to complete them. Further details will be given at the lectures, or on inquiry at the laboratory.

CHARLES N. HEWITT, A.M., M.D.,
Professor.

PUBLIC HEALTH IN THE PUBLIC SCHOOLS.

Information for Teachers and Suggestions for Instruction of Pupils.—This memorandum is an appeal to teachers for co operation in the attempt to make public health a matter of regular instruction in schools. Besides the legal obligation (Sec. 26 of Chapter 132, laws of 1883), teachers are urged to this co-operation because it will increase the pleasure and efficiency of their work.

The population of the school-going age (five to twenty years) belongs to the class most susceptible to the causes of ill health and specific disease. This period is the formative one, being that of physical as well as mental growth; 9.6 per cent. of deaths from all causes of both sexes and of all ages in Minnesota (a total of 1400 deaths per annum) occur at this period.

45 per cent. from diphtheria.

32 per cent. from scarlatina.

20 per cent. from measles.

17 per cent. from enteric (typhoid) fever.

15.8 per cent. from diseases of digestive organs.

15.6 per cent. from pneumonia and bronchitis.

14.5 per cent. from tuberculosis.

10.6 per cent. from diseases of heart and blood-vessels.

7.4 per cent. from diseases of nervous system.

This total of deaths means at least five times as many cases of sickness and twice as many constantly sick.

Teachers know from experience that a large per cent. of children attending school are constantly off duty from disabilities, short of "bedfast" sickness, such as feverishness, headache, eye-ache, and other ailments hard to define but none the less real, and incapacitating from study, interest, or attention in school work. Many of these disabilities are important as indicating the approach of serious disease.

For the teacher's purpose, public health—practical hygiene—is a means to an end and constantly available in every-day work. As usually taught, it is more theory than fact, and is easier to

talk about than to apply. It is apparently more complete and systematic than what is here offered, and is therefore more acceptable to the average teacher.

There is so much misunderstanding as to the basis facts of public health, that a brief statement will help to explain and justify the plan I have to propose.

(1) Health is that condition of the individual which gives him opportunity for the most perfect development and use of all his faculties for the longest time consistent with the laws of life. It is common experience that, though the normal state of man, it is rarely attained.

(2) The natural life is the ideal one and the nearest approach to it, possible for the greatest number, is the prime motive of public health.

(3) Ill health and premature death are the rule rather than the exception in average human life, and are penalties paid for the violation of natural laws, which, as they relate to health, are sanitary laws.

(4) Obedience to many of the most important natural laws is intuitive and unconscious. A knowledge of others is now possible for the majority of civilized people, and therefore their violation is inexcusable in proportion to education, information, and civilization.

(5) Chief obstacles to healthy living are (outside personal ones) the frequent helplessness of the individual against the inheritance of ill health, unhealthy homes and training, or the unhealthy life, influence, and example of other persons.

The elementary conditions of approximately healthy living (the inalienable right of every one) are the possession and free use of (*a*) abundant pure air, (*b*) unobstructed sunlight, (*c*) abundant pure water, (*d*) the right to have or earn enough and properly prepared food, and (*e*) proper and sufficient clothing, which includes shelter and bed, (*f*) opportunity for the natural development of the whole man to maturity, for self-supporting labor, and for maintenance in old age, (*g*) opportunity for play, for rest, and for sleep.

The individual alone is not sufficient for these essentials; they are very largely affected by associated living with other people in home, community, State, and nation, and involve intimate relations with plants and animals and all that we call "nature." Healthfulness is the outcome of the performance of duty in all these relations.

Public health as a study deals with facts of social organization and social needs. Its unit for the family is the individual ; for the municipality and State, the family ; these units are inseparable. Instruction of the individual begins in the family and home, because it is the source and centre of healthy community life ; next comes the school, and then any other centre of associated effort.

As the average of health is conceded to be below a natural and attainable standard, and average mortality is far higher than it need be, all intelligent people admit that these losses should be prevented or diminished, but you will find it takes a good deal to persuade them that they have any thorough personal work to do for themselves or others, or that laws, regulations, and boards of health are not sufficient. The object of instruction in public health is to demonstrate this duty of the individual to make it an every-day helper, and show him how to use it.

Fortunately many of the helps to good health are apparent, and so are some of the causes of ill health.

The school instruction here proposed need not go beyond concrete and demonstrable every-day facts, so that within the easy comprehension of every child, hygiene may be so clearly and impressively taught as to become a spring of intellectual action and conduct.

I think it is essential for clearness that the study of the causes of health and ill health begin with our relations to the inorganic elements of all created things,—the air, water, sunlight, and soil ; next follow our relations to plants and animals below man, and then our relations among ourselves.

Begin the simplest demonstrations and experiences with the youngest, and go on with the older scholars to the principles deduced from the facts, which are to guide them in the maintenance of health and the prevention of ill health to their life's end. The teacher should use the student's or his own personal experience for illustration, and an apt story fixes a principle better than a mathematical demonstration.

Public health so taught in the public schools will work its way and influence into the family. Only those who have to contend daily with ignorance and prejudice on this subject when dealing with infectious disease, offensive trades, or public nuisances can fully understand what a gain such a knowledge would be to well-being and well-doing of family and community alike.

As to the literature of public health, I advise you to go directly to the leading encyclopædias, which contain articles written by experts upon each one of the subjects here proposed for instruction. The circulars of the State Board of Health give detailed directions upon the practical side of the work. They should be read and studied by the teacher. For any detail not found, or when in doubt, write to me for a suggestion, then collate your own experience with reference to each of the following topics: find illustration as far as possible in the every-day life of the school, and, as opportunity offers, demonstrate by description or experiment.

(1) *Air*.—Composition, uses, difference between expired and inspired air, and that of the “open” and the house. Collect and exhibit (by microscope when necessary) matters in suspension, demonstrate its gases by easy experiments and show how respired air may carry impurities or disease.

(2) *Water*.—Composition, hardness, varieties, their relative value and simple physical and chemical characteristics. Demonstrate such impurities as you can find, show how to tell good from bad, and how it may be fouled in and about the house, and in the soil. *Baths*.—Why, when, and how to use them.

(3) *Light and Heat*.—Their action on living things, necessity for health and their use in destroying impurities and disease,—disinfection.

(4) *Foods*.—Show that *air* and *water* are foods. The varieties and use of vegetable and animal foods, why and how they are cooked, how they are digested, assimilated, and used.

(5) *Work and Play*.—Their difference and value, their varieties and relations to health and ill health. *Gymnastics*.—How far a substitute.

(6) *Rest and Sleep*.—What they do, their use, and the time they require. How repair of body and rest of mind are secured by them.

(7) *Personal Hygiene*.—Clothing (body-wear, bed, house), wool, cotton, linen, rubber. The facts of the use and abuse of tea, coffee, fermented and distilled liquors, condiments, tobacco.

(8) *Ill Health and Disease*.—What they are, what causes them. Bacteria, character, and function. Vaccine and vaccination, reasons for. Infectious and non-infectious diseases. How sick people spread the cause of their diseases by contact, by clothing, by infected things, and rooms; why the isolation of such sick and those exposed to them is necessary for the protection of

other people; how to disinfect persons, clothing, rooms, and other things.

(9) *To preserve Health and to prevent Ill Health, not to Care for the Invalid or cure Disease, is the Object of Public Health.*—To be well and how to keep so must be the first lesson; then its service restoring health and helping the weak and disabled.

(10) *Death, Natural and Premature.*—The natural disposal of dead animal or vegetable matter. Nature's method of earth-burial for the disposal of excreta and refuse. The improper disposal of such matter and how it affects the purity of the soil, air, and water.

This little syllabus you will find a pretty full one, and sufficient to test the knowledge of the best teacher, yet it suggests the least that educated people ought to know, and will lead to much more information if faithfully used. It involves, on the part of the teacher, study and search for evidence, available as illustration in the daily events of the school-room and life, odors, water-supply, and use, heating or cooling, ventilation, lighting, cleanliness of persons and things, sickness or accident, which may serve to suggest a lesson and fix a truth in the memory.


Instruction by a well-prepared teacher should be given in this way without text-book, or apparent intention to teach, or special hour, but by availing himself of the abundant opportunities to teach children from common experience how to escape many a pain or ache, and the loss of a lesson, a pleasure or a holiday.

To teach health you must "prove your faith by your works"—practise yourself what you urge the scholar to learn and do for himself.

Beyond this gain, great as it ought to be, see what will be the outcome of such instruction by increasing numbers of earnest and interested teachers, hearty co-workers in public health, informing themselves and their pupils, and so sending efficient sanitary leaven into thousands of homes. And when an outbreak of serious disease comes, as it does to every community, the health officer finds intelligent co-operation from teachers and the families they have taught through their children. Confidence and courage replace ignorance and cowardice, the chances of success are increased and public safety promoted by the substitution of definite knowledge as here proposed for current popular belief on the subject.

**Important Facts ; and a few Practical Difficulties
Encountered in Enforcing Sanitation.¹**

BY G. W. DAVIS, M.D.

S we retrospect the past twenty years of medical history we find nothing that has increased more rapidly than the important fact that the future of medicine will be very largely in the field of sanitation. The student who has kept in constant touch with the prodigious progress of the times has seen precept and theory, one after another, fall before the indefatigable research of the pathologist and bacteriologist, however much the accuracy of the latter may be questioned, as it is at the present time. Our revered medical teachers taught us many things which have disappeared like the baseless fabric of a vision ; and in their stead has arisen a new era, new methods of treatment, not only in internal medicine and surgery, but also in the rapidly expansive field of preventive medicine. The arduous and unselfish labor that is being bestowed in this benevolent department of a lofty and scientific profession must forever remain to and be considered by the future medical historian highly praiseworthy and monumental.

It is perhaps within the memory of all of us that it is not more than possibly ten years since scientific research imparted to the profession any actual or even satisfactory idea of the immediate cause of those diseases known as infectious. Their contagiousness was disbelieved by many. Physicians having an extensive experience with this class of diseases had observed their special incidence in particular localities ; still, the causes were presumed to be entirely due to insanitary conditions, such as decomposed animal and vegetable matter in cellars, sewers, and low, damp places. Experienced observers of zymotic diseases give such influences a secondary place and consider them as exciting causes rather than the immediate cause.

The important point just here is, in my opinion, that the damage which the presence of decomposing organic matter produces in the cause and propagation of such affections should not be lightly treated or lost sight of.

¹ From the Pacific Medical Journal. Synopsis of a paper read before the California Sanitary Convention.

Otherwise the laborious sanitarian and the efforts of the efficient health officer will frequently be deprived of an argument and power of large value in disseminating knowledge of sanitation, or the suppression of outbreaks of contagious diseases, or to supply a reasonable explanation for the existence of sporadic cases.

Another important fact deserves attention, and it is what is known as the immediate cause of diseases due to the products of bacterial metabolism. For example, diphtheria, which is more constantly present either endemically or sporadically, and more frequently possesses greater virulency than any of the other infectious difficulties. The important fact in connection with this disease is, that upon the physician rests the responsibility to correctly and promptly diagnose diphtheritic cases and immediately report them to the proper officials.

In a recent circular sent to all the U. S. Marine Hospital stations by the surgeon-general of the Marine Hospital service, it is stated "in a majority of cases a bacteriologic examination is necessary to determine the character of the disease, requiring from twelve to eighteen hours to make proper cultures;" and again, "if the case is one of diphtheria, cultures should be taken every five or six days after disappearance of the membrane." This is to determine when the bacillus diphtheria disappears. In a well-appointed army or navy medical service or in cities where there are specialists in bacteriology, and when physicians in general are more familiar with microscopic technique, this can and should be done.

In the smaller towns or country, where an epidemic of diphtheria frequently has its origin, the use of this means, in a large majority of cases, is impossible, and in this fact lies a difficulty in dealing with this class of infectious troubles. An observing physician's eyes should be keener and surer than a microscopic lens, and see and know a pathologic lesion as well as a perversion of function.

The problems of rail-train, street-car, and work-shop sanitation in these directions are so complex and difficult, involving as they do so many mechanical questions, we cannot do more than to mention the important fact that the first principle involved in passenger-coach, street-car, and work-shop sanitation is absolute cleanliness. If the prime necessity of the principle can be universally inculcated, it will not be long, through the wonderful

inventive powers for which the American people are so well known, before the scientific and highest sanitary method of lighting, heating, and ventilating railway coaches will have been reached, and another of the practical difficulties removed in enforcing sanitation.

With regard to the importance of sanitary legislation, the experience of many able in this line of work is that it is peculiar, if not often exasperating. Beginning with a condition of almost an absolute sanitary chaos as regards legal sanitary measures, laborers in the field of preventive medicine are beginning to reap the reward of perseverance and industry. There exists in the minds of the medical profession and many legislators, opposing views as to which is the wisest thing to do, to first enact sanitary laws, or begin with the education of the masses.

I am in accord with those believing that we should begin at the highest notch in the scale. Sanitary ideas, like all advanced ideas, must begin high up and move downward. Law, as a rule, is the most effectual educator. When the foundation stone of the sanitary structure has been well laid, then we can proceed more rapidly to educate the public.

To Avoid Poisoning by Tinned Food.

Some light is thrown by the *Lancet* upon the mysterious cases of poisoning by tinned food which from time to time are reported. They are believed to be due to neglect of the caution against eating tinned foods that have been exposed to the air for some time after being opened. The exact manner in which poisonous substances, technically known as "ptomaines," are generated so rapidly is not known with certainty, but the fact that they are produced in sufficient quantity to cause very grave symptoms of poisoning have been brought out in a multitude of instances. In one well-known case the first half of the contents of a tin of lobster was consumed with no ill effect, but the rest, a few days afterwards, proved extremely poisonous. It is suggested that as a safeguard manufacturers might label the tins with some such notice as, "The contents of this tin are perfectly wholesome when eaten fresh from the tin, and afford good food, but the public is advised not to expose the contents for any length of time to the injurious influences of the atmosphere." The writer goes so far as to suggest that some such warning might be insisted on by the legislature.

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Functional Nervous Diseases.

(Continued from January issue.)

BY reference to the article on "Constipation," etc., on page 1 of the January issue of this journal, the reader will glean some idea, so to speak, of the mechanism of life; he will understand that the phenomena of life are caused by the disintegration and reintegration of the organic matter that is consumed as nourishment.

That which is true of the body at large is true also of each and every portion and organ of the body, and it applies equally to the nervous system.

The nervous system builds up and the nervous system breaks down, and in a perfectly healthy human being, at maturity, these two processes exactly balance.

As the result of this building up and breaking down what we have termed "vital steam" is generated, and when the balance is perfect just the requisite quantity and quality of steam are generated to preserve the body in a state of health and to enable it to resist the inroads of disease.

If for some reason this nice balance is deranged, if the process of breaking down predominates over that of building up, then it must be evident that the quantity and quality of steam will be deficient, because its seat of manufacture, the tissue out of which it is evolved, is degenerate.

If, as we contend, the vital functions are all under the control of the nervous system, if they all derive their power from the vital steam that is generated by the nervous system, it seems logical to conclude that if the organs be healthy, yet functionate not properly, that it is because they do not receive a sufficient quantity of steam of efficient quality.

There are certain definite diseased conditions that present themselves unmistakably to the physician, and about which there can be but one opinion; then, again, there are many illy-defined departures from a healthful standard to which it is not so easy to give a definite name.

Now, to our way of thinking, the cause of much of this vague invalidism will be found, if looked for, in the nervous system, and successful results will follow a treatment directed to this system. Illustrations often make clear an idea much better than words possibly can; let us therefore introduce a case here. A clergyman visits Atlantic City for a prolonged stay, because he is, so to speak, "below par," physically; after a time he expresses himself as disheartened, because he has failed to derive any appreciable benefit; he presents the general appearance of one on the verge of consumption, yet an examination of the lungs fails to reveal any disease thereof; his various organs in turn give only negative evidence; he is not robust; he lacks tone; everything that he does is an effort to him, yet it cannot be said that he has any special disease.

With the idea in view that we have been describing, his urine is examined and the deposit of earthy and alkaline phosphates found to be very excessive; appropriate treatment is instituted, and, as this deposit (which we recognize as evidencing a loss of nutritive balance in the nervous system) diminishes, his general condition is markedly improved; when cases like this multiply indefinitely, are we not forced to a recognition of the relation between cause and effect?

Again, a lady complains of an uncontrollable restlessness; her appetite is good; her digestion satisfactory; she is strong, physically; can out-walk any member of her family; but she has an uncontrollable restlessness, apprehension, morbid dread, so to speak; her life is a burden.

Examination of the urine does not reveal an excessive deposit of the phosphates; on the contrary, they are markedly deficient; what, then, do we argue from this condition? That the nervous

system is making too much steam ; that it not only generates enough for the needs of the system, but that it makes an excess which, in its discharge, gives rise to the restlessness, uneasiness, apprehension, dread.

To recapitulate : we believe that very much invalidism is due to a loss of balance between the constructive and destructive processes of the nervous system, and we believe that much light will be frequently thrown upon illy-understood conditions, if this fact be remembered and acted upon.

(TO BE CONTINUED.)

Oxidation.

A RECENT article by an eminent English physician calls attention in an especial manner to the prime necessity of oxidation in the economy of healthy humanity, and causes us to realize, even more forcibly than we hitherto have done, how absolutely necessary oxidation is for health.

In the blood of an average human being there are continually circulating 2,250,000 of little red corpuscles, little bodies, little boats, so to speak, whose chief function is to receive a store of oxygen in the lungs and carry it throughout the body.

When we realize that one can live for weeks without food, for days without water, but not for five minutes without air (the vitalizing ingredient of which is oxygen), are we not compelled to recognize the absolute necessity of oxygen ?

When we remember that life is a constant molecular change, and when we realize that oxidation is the process of molecular change, are we not forced to rightly estimate the importance of oxygen to health ?

Fresh air,—ventilation,—plenty of oxygen, they all mean the same thing, and they mean one of the greatest requisites of health.

Novel Use of Compressed Air.

Jets of air discharged from flexible hose are made to do the work of brooms, whisks, and cloths in removing dust and cinders in passenger cars. The hose may readily be carried to any part of a car, and is used in the same manner as an ordinary hose carrying water.



How She Walked.

A lady teacher in one of the public schools in trying to explain the meaning of the word "slowly," illustrated it by walking across the floor. Then she asked the class to tell her how she walked. She nearly fainted when a boy at the foot of the class shouted, "Bow-legged, ma'am !"

For Soft Corns.

A concentrated solution of tannin, made by dissolving an ounce of perfectly freshly-made tannin in six drachms of water with the aid of gentle heat, gives immediate relief to soft corns, if applied once or twice a day between the toes after washing. Tannin in powder is not quite so effectual.—*British Medical Journal*.

The Sunlight of Virtue.

You will find it less easy to uproot faults than to choke them by gaining virtue. Do not think of your faults, still less of others' faults; in every person who comes near you, look for what is good and strong: honor that; rejoice in it; and, as you can, try to imitate it, and your faults will drop off like dead leaves when their time comes.—JOHN RUSKIN.

To Make Good Cider.

Take as much fruit (twenty-four bushels to the hogshead of sixty-three gallons) as will make sufficient juice to fill a cask; mash it into a pulp; spread so as to cover a large surface in the open air for twenty-four hours; press out the juice as clear as possible; fill the barrel up to the bung-hole, and keep it filled up as the fermentation proceeds by adding fresh juice for the purpose; when the fermentation is ended draw off into a clean barrel; bung up tight, and keep the barrel in a cool place.—*Confectioners' Journal*.

Fire-Proof Cloth.

It is an easy matter, without in any way injuring its appearance, to make cloth almost fire-proof. This may be done by mixing a little alum or tungstate of soda with the starch used on the cloth. When treated in this way the cloth will not blaze up when exposed to a flame, though it will char very slowly.

Prunes for the World.

There are in all over 6000 acres of prune orchards of bearing age in Oregon. There are also several thousand acres of one-year-old prune orchards not included above, but which will add materially to the total output of fruit. A good crop this year will mean, therefore, an output of 6,000,000 to 10,000,000 pounds of cured prunes in Oregon.—*Northwest Magazine.*

Eggs Hatched by Electricity.

The idea of hatching eggs by electricity may appear somewhat far-fetched, but electric incubation is not only being carried on in Germany, but is growing up into a large industry. A Strasburg electrician, who has been experimenting for three years, has found that with the electrical incubator ninety chickens can ordinarily be counted on out of every 100 eggs dealt with.—*Popular Science News.*

Diamonds and Dirt.

She was not an especially handsome woman, but she had well-shaped hands, long, slender, and very white. Like most women who think they have good hands, she wore no gloves. But she wore rings. I counted no less than five on one hand, and there were at least two more on the other. There were two or three great marquise rings, an unusually heavy wedding ring, and altogether somewhat more than a dozen variety of gems, with diamonds especially conspicuous. Those hands might have been dazzling, but whenever she held them up the fact was disclosed far more conspicuously than the jewelry that there was a deep black line of dirt under each of the finger nails! And all this feminine barbarity was exhibited yesterday on a Buffalo trolley car!

Application for Warts.

Salicylic acid, fifteen grains ; lactic acid, fifteen minims ; flexible collodion, two drachms. Mix, and apply night and morning.

Gypsies.

The name "gypsy" is said to be a corruption of Egyptian, a band of these tribes having entered Europe in 1418, under a leader called Duke Michael, of "Little Egypt." But the French call them "Bohemians." There is a wide-spread belief that they are of Eastern origin. In Hungary they are called Pharaoh's people. The Danes call them Tartars. The Turks call them black Indians from the mouth of the Indus ; and they call themselves "Sinte," because they say they came from Sind, in Hindostan.

Dangers of Ear-Piercing.

There is nothing more necessary to our physical well-being than cleanliness. Yet the course of human life is constantly interrupted by incidents and accidents which prove the neglect of this duty. For instance, an infant recently died from septic poisoning after having her ears pierced. A pawnbroker from whom the ear-rings were purchased was the operator. A day or two later—that is, about the time when septic mischief would show itself—the ear became swollen and ulcerated, and the case soon ended fatally.—*Popular Science News.*

Mock Cider.

For making this artificial cider take fourteen pounds of raisins, with the stalks ; wash them clean in water ; when ready put them into a clean cask, with the head out, and pour in six gallons of clean, soft water on them ; bung up for fourteen days ; then rack off into a clean cask, and in six days' time it will be fit for bottling ; when in bottle for a week it will be fit for use ; use a few drops of liquid cochineal to color before bottling ; the raisins can be used afterwards for vinegar. This cider may also be flavored with any kind of fruit juice or essence required.—*Confectioners' Journal.*

Public Schools and Vaccination.

The Supreme Court at Hartford, Conn., has decided in a suit brought against the New Briton School Board to compel them to admit unvaccinated children to the public schools, that the law giving the school board the authority to order all children vaccinated, and to exclude those not vaccinated from the schools, is constitutional.—*Southern Medical Journal*.

Living Lanterns.

In Cuba the cucojo, the famous firefly of the tropics, the one that affords the most brilliant light of any land animal, is confined in paper lanterns for going about the country at night or for in-door lighting. Thirty-eight of them yield one candle power. Sometimes they attach one of the insects to each foot for travelling in the dark. They also use them for ornaments for the hair and dress.

Rod versus Man.

Rod *vs.* Man contests are a form of sport which is becoming popular as a pastime among the legitimate disciples of old Izaak. It is a rough-and-ready sort of amusement, but is calculated to bring out a certain amount of skill on the part of the rodsman, and a very considerable amount of muscular power; while on the part of the "fish," first-class swimming powers are, of course, the first necessity, while endurance and the exercise of the greatest judgment are of prime importance. The *modus operandi* is as follows: The water being chosen, the "fish," male or female, presents itself in proper swimming attire. A sort of brace, made to fit over the shoulders and fastened at the back, is then fixed to the subject. At this back part an arrangement is made, generally by means of a ring, to which is attached the line of the angler. This can be done in various ways, the most common means adopted being a spring swivel. This done, the fish dives into the water and the play commences. The object of the "fish," of course, is to keep as far as possible from the angler, or to break his line, while the angler's object is to bring his quarry to bank, or within gaffing distance. Ten minutes are generally allowed for the contest, which usually ends in a victory for the "fish."—*London Sketch*.

Tomatoes and Cancer.

Doubtless many of our readers have been repeatedly asked whether there is any causative relation between the eating of tomatoes and cancer, because there is a very prevalent and firm belief, not by any means confined to the more ignorant classes, that tomatoes have a tendency to produce cancer. An English physician refers this question to the London *Lancet* (October 12), and the reply is returned that there is no evidence of such association. This is as we would have supposed, but it is gratifying to have an authoritative expression of opinion on the subject from a reliable source.

Sunlight.

The direct rays of the sun are among the most powerful of germ-destroying agents. The most deadly germs perish within a few minutes under the direct rays of the sun. Most germs are also killed by the action of diffused light. The spores of germs, however, are quite resistant, even to the direct solar rays. Hence other disinfecting agents are necessary for the complete eradication of germs. The value of the sunlight as a disinfectant, however, is above estimate, hence the importance of admitting the sun to every portion of our dwellings. For sanitary purposes, an ideal house should be constructed of translucent glass, so that the sunshine might penetrate to every corner. Dark closets are hot-beds for germs.

No Excuse for Not Getting Well.

"Uncle Allen," asked the caller, "do you know of anything that's good for a cold?"

Uncle Allen Sparks opened his desk, took from one of the pigeon holes a large bundle of newspaper clippings tied with a string and threw it into the other's lap.

"Do I know of anything that is good for a cold?" he echoed. "My young friend, I know of 627 infallible ways of curing a cold. I've been collecting them for forty-nine years. You try those, one after the other, and if they don't do you any good come back and I'll give you 116 more. Bless me!" added Uncle Allen, with enthusiasm, "you can always cure a cold if you go at it right."

He dug up a bundle of yellow, time-stained clippings out of another pigeon-hole and the visitor hastily coughed himself out.

Lassoing Bicyclists.

Bicyclists in Golden Gate Park, San Francisco, who violate any of the park rules are brought up short in a novel way. The park policemen are experts with the lasso, and if any scorcher violates the rule limiting speed he is remorselessly roped and brought up like a fractious steer by the cowboy policeman.

Removing Fish-Hooks.

If a child runs a fish-hook into a finger, do not attempt to draw it out backward, says Dr. George H. Hope. Cut the line quite clear from it, turn the point upward and push it through. Accidents with crochet needles are constantly occurring, and if one be pushed deeply into the flesh you had better not try to pull it out; the hook at the point will tear and inflame the part. A surgeon with proper instruments will take it out safely without difficulty. If you should be at a great distance from a surgeon, the best thing you can do is, first, be very sure which side the hook is, then push a smooth ivory knitting-needle, or something of that sort down the wound till it touches the hook, then pull out both together.

The Leak in the Kitchen.

It has long been maintained that in the average American home the cost of living—that is, of the food-supply—is at least 100 per cent. greater than it need be. Experiment has demonstrated this time and time again, but many housekeepers, especially among those who have the greatest need to practise economy, cannot be brought to a realization of the extravagance of their manner of cooking. In many public schools physiology is now one branch in the course of study, says womankind. This affords an opportunity for the intelligent teacher to impart to our future housekeepers some knowledge of the relative values of food, and with this knowledge as a foundation we will probably learn some day to utilize many food producers that are now wasted. The cooking schools are doing much to bring about that time by showing us how to prepare appetizing meals from what our mothers would have thrown away, and also how in a pinch to serve the same article of food every day for a week, but prepared in so many entirely different ways that the head of the house does not complain of a monotony.—*Philadelphia Press.*

Artificial Human Milk.

A Berlin physician has devised what seems to be a rather novel method of imitating the modern milk. Cow's milk is fermented by means of rennet, and the whey thus obtained is carefully sterilized, and then enriched, as required by different individuals, by the addition of cream.—*Medical Record*.

Physicians as Murderers.

That is what many of us are, although we may fail to admit the applicability of a term so harsh. We are not deliberate murderers in the ordinary sense of the term; we may not be murderers by commission, but many of us certainly are murderers by omission, and, when rightly understood, a sin of omission is as grievous as a sin of commission.

In truth, those of us who murder are the most despicable of murderers, because we will kill those who have blindly, confidently, unhesitatingly placed their lives in our care.

Following out the line of thought inaugurated in recent editorials, how can it be questioned or denied that the physician who carries the germs of disease into a household with fatal results is as clearly guilty of the murder of those who may die therefrom as he would be if, under the guise of a harmless draught, he administered a deadly poison. The intent to kill does not exist in the first instance, it is true; it is a crime of omission, but it is none the less a fact that the physician is responsible for the results. In the course of a discussion on "antiseptic midwifery," recently, before a New York medical society, Dr. Thomas Darlington said that "whenever there was sepsis, it came from the physician, not from the patient." The full import of this assertion is appalling—frightfully appalling—to contemplate. Divested of all verbal adornment, it is equivalent to saying that every woman who dies of puerperal sepsis has been in reality murdered by the man to whom she has intrusted her life.

Ridicule this assertion as we may, contradict it as we please, it is a fact, a terrible fact,—a fact that should cause us to pause and reflect upon the terrible responsibility that is incurred by the physician who, in the light of present day knowledge, fails to thoroughly familiarize himself with the detailed teachings of disinfection and act in accordance therewith.

Death from Sin and Fear.

The papers report the case of a child living in Anderson, Ind., who was attacked with diphtheria. During the course of the disease the child was attended by a Christian Scientist. The patient died and the Scientist made out a death return, "Died from sin and fear." The authorities made an investigation and found that the child had died of diphtheria. It was also found that the "doctor" and the parents had relied upon faith entirely in the treatment of the disease. Warrants have been issued for the arrest of both the parents and the "doctor."

Mental Disorders and Hard Times.

In an interesting paper which he read before the meeting of the Actuarial Society of America, in Montreal, the other day, William T. Standen, the well-known insurance man of New York City, discussed the relation of certain mental disorders to hard times. He said that he had learned by investigation that a marked increase of mortality from brain-diseases and trouble of the nervous system has invariably followed the occurrence of panics and periods of long-sustained financial stringency, and he pointed out the physical and mental ailments most unfavorably affected by such conditions.

Lettuce.

Lettuce was deemed by the ancients the food of the dead, because, when Venus's lover, Adonis, was mortally wounded by a wild boar, the weeping goddess laid him on a bed of soft and tender lettuces, whose milky juice possesses soothing and narcotic qualities. Lettuces were eaten by the ancients at the close of their repasts, as from their cooling properties they were considered antidotes to the heating effects of wine.

The bitter herbs which the Jews ate at the Passover were wild lettuce, succory, tansy, camomile, and dandelion, and the same race invented a salad compounded of oil, vinegar, sugar, salt, and mustard, to render the bitter herbs palatable. The Irish, two centuries ago, made their salads of sorrel wood, sorrel and beet chopped with vinegar, beer, and a little sugar, but no oil, salt, or mustard. Classic history records that lettuce caused the cruel death of Cambyses, King of the Medes and Persians, and of his sister, who was also his wife.—*Confectioners' Journal*.

Sick or Ill.

Mr. W. D. Howells discusses, in a humorous way, the fact that there is a tendency in America to use the word "ill" in place of the word "sick," following the English fashion. To the Englishmen the word sick implies, as we understand, a morbid state especially connected with the stomach and with nausea. The American uses the word sick to indicate all kinds of morbid states. The word sick is a good, honest Anglo-Saxon term, and has answered the purpose very well during these last 200 years. But Mr. Howells seems to think that it has got to go, and that in time there will be no sick people in America, but only persons who are ill.

Alcoholic Predisposition.

Many men in active life are profoundly conscious of the danger of a single glass of spirits. (Says Dr. T. D. Crothers.) They recognize the degenerative predisposition that is present urging them to take spirits, but overcome this tendency. Such cases often appeal to me for counsel to acquire new strength for this struggle. Suicide is the frequent ending of such cases; finding this craze for relief increasing and being overcome by it, give way to melancholy. This predisposition and central nerve degeneration not unfrequently dies out in middle or later life. Some unknown physiologic change takes place in the nerve centres and all desire or taste for spirits disappears. Conditions of ill health, surroundings, and other causes are inoperative. He never drinks again. The taste of spirits is repelling and seem to have no effect. Such men often explain this as a mere effort of will, or the power of some supernatural force, or the effect of some drug, or remedial appliance.

This predisposition in other cases never dies out, but always remains slumbering and ready to be fanned into a mild flame at any moment. In certain states of living and surroundings it never appears; in others it is dominant beyond the power of control. Mental contagion, strain, irregularity of life and living, bring it into prominence. Again this degeneration breaks out at distinct periods of life, then dies out, only to appear in some other form. The period of adolescence is often marked by alcoholic excess which subsides in manhood, or appears in the senile stage again.

Tea, Coffee, and Tobacco.

Dr. Bock writes as follows respecting the influence of tea and coffee upon character: "The nervousness and peevishness of our times are chiefly attributable to tea and coffee; the digestive organs of tea- and coffee-drinkers are in a state of chronic derangement, which reacts on the brain, producing fretful and lachrymose moods. Fine ladies addicted to strong coffee have a characteristic temper, which I might describe as a mania, for acting the persecuted saint. The snappish, petulant temper of the Chinese can certainly be ascribed to their immoderate fondness for tea."

The Sense of Taste.

The physical development of the race is largely dependent upon this sense. Its object is not only to guide and direct the choice of foods, but also to aid digestion by inducing us to chew them properly and sufficiently. Children should be taught to chew, and thus really taste their food. The teeth are given so little to do and the stomach so much that both are out of order. If taste were more cultivated, it would scorn food unfit for the human body. An old proverb says, "That which pleases the palate, nourishes," and the converse should also be true; only that which nourishes should please the palate.

Through an educated appetite man learns to adapt himself to climatic changes and to the varying fortunes of travel. The most uncomfortable persons to entertain are not those who have had wide experience at tables in many homes and different lands, but rather those who have become so accustomed to having their food prepared "just so" at home, that they are made uncomfortable by any infringement on their pet habit of eating.

Many persons, by effort of will, have learned to eat something which was at first distasteful, because they thought it was proper to eat tomatoes, oysters, olives, or olive oil. Do we make the same effort to learn to eat what is good for us?

The development of a healthy appetite should be the cornerstone of education at home and in school. Self-denial learned in babyhood, the sense of taste educated to select right foods, and a better, stronger race of men and women will arise to settle the questions which perplex us.—*Selected.*

A Prize Poem.

A syndicate of Western editors offered a prize of \$1000 for the best appeal poem to newspaper subscribers to pay up their subscriptions. Christopher McShee, editor of the *Rocky Mountain*, won the prize with the following poem :

Lives of poor men oft remind us
 Honest toil won't stand a chance ;
 The more we work there grow behind us
 Bigger patches on our pants,—
 On our pants once new and glossy,
 Now of stripes of different hue,
 All because subscribers linger
 And won't pay up what is due.
 Then let us all be up and doing,
 Send your mite, however small,
 Or when snow of winter strikes us,
 We shall have no pants at all.

Shoddy Bedding.

Before the recent meeting of the American Public Health Association at Denver, Col., Mr. George J. Kindel, of Denver, who is a manufacturer of bedding supplies, mattresses, etc., dumped on the floor a collection of shoddy rags, not very clean in appearance, which he stated in a vigorous manner was a fair sample of the sort of material put into rag mattresses of the cheaper quality. He thought it was dangerous and quite likely to breed disease. He asked the association to investigate the manufacture of such bedding, and concluded by saying :

“ For years I have earnestly endeavored to bring about reform in the manufacture of bedding. In the interest of pure and healthy bedding I, three years ago, visited the health authorities of the cities of Chicago, St. Louis, Cincinnati, Buffalo, and New York City. Also those of Liverpool and London, England.

“ Near New York City is manufactured to-day a shoddy (rag) comforter that is sold in every city in the United States. Shoddy (rag) mattresses are manufactured in every city of 100,000 inhabitants. In our beautiful city of Denver there are two such manufactories, my own and that of Kent & Stuchfield. It is not by choice, but by compulsion, that they are made here. Chicago, Omaha, Lincoln, Wichita, ship them in by the carload, hence we must make them or go out of the bedding business, as in this section four-fifths of the bedding is made of this vile stuff.

“In addition to the notice of this subject to the State Board of Health, I have again called the attention of our esteemed Board of Health to this subject, while a member of the grand jury in April, 1894, when I endeavored to indict myself for making this dangerous bed filling. We had these medical officers before us to give expert testimony. They differed widely. Some went so far as to say that there was nothing unhealthy or dangerous about it. Needless to say, the grand jury did nothing except to make a slight mention in their report to the court about it.

“So long as there is no national law governing the subject, just so long will these goods be manufactured and sold under the innocent title of wool bedding. Every dry goods and house furnishing goods store have these goods on their counters.”

The Berlin Sewage Question Farms.

The city of Berlin, Germany, is believed to be cholera-proof. She disposes of all the sewage within her borders at a profit of 2 per cent. Twenty years ago was purchased some thousands of acres of flat sand wastes adjacent to her boundaries. With these she began the experiment of utilizing sewage. The city was divided into districts. In each district the sewage flows into an immense cesspool. Thence it is removed by powerful pumping machinery to the fields of the sand wastes and spread upon them.

There are no “barnacle politicians” in Berlin to hang on and ruin the workings of the city government. The administration of the sewage farms is in the hands of citizens of the highest respectability, and under their management the result has grown to be an object lesson to all cities of the earth. The pumps work night and day. The lands irrigated by the sewage ditches are cultivated in grain and vegetables. The product is the finest by far that appears in the Berlin markets, and is the most in demand. Land about Berlin in its natural state, before sewage irrigation was applied to it, was worth \$200 per acre. As soon as it is put under the operation of the gigantic pumping works, however, it immediately rose in value to twice this sum. The question may be asked, are the workmen on the farms healthy? Yes, as healthy as workmen anywhere. The dampness of the soil rather inclines them to rheumatism, but they are not troubled with contagious diseases. Every effort is made to make the sanitary conditions as perfect as can be.—*Journal of Hygiene.*

Cupid at the Telephone.

The effects of modern scientific discoveries upon the details of social intercourse is one of the most interesting subjects upon which the mind can dwell in these latter days. A striking illustration of this fact is given by a recent demonstration of the adaptability of the telephone to the solution of a problem as old as the institution of matrimony.

There have been, it is sad to reflect, thousands of old maids who have gone to their graves the uncomplaining victims of the men who dare not propose. They have died unmarried because they were loved by bashful swains.

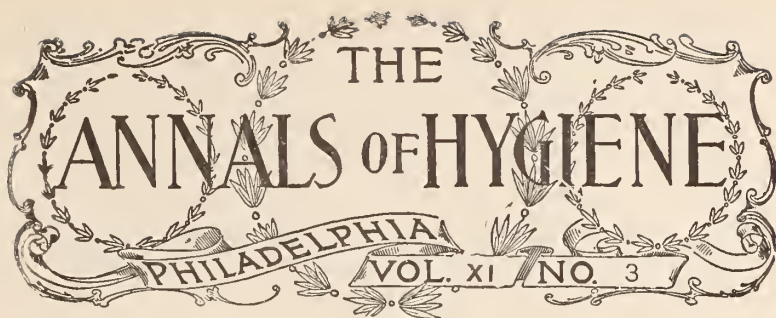
George B. Gaston, of Indianapolis, Ind., is a bashful man. At close range he lacked the courage to tell his love to Ethel Mary Bishop, of Pelham Manor, N. Y. But Mr. Gaston has become a pioneer in a new field of applied science. Across 1000 miles of telephone wire he popped the question by electricity and found to his delight that Miss Bishop was not at the negative pole.

Mr. Gaston's success with the telephone as an aid to matrimony will bring sunshine into the lives of maiden ladies and bashful men. While there's a telephone there's hope. It may be that Mr. Gaston's method of proposing matrimony lacks a romantic flavor, but it solves a problem and establishes a precedent. It will serve in the future to place a great many marriages, otherwise impossible, under the head of current events. Cupid up to date is armed not with a bow and arrow, but with a storage battery and a mouthpiece.—*New York World*.

"Bacteria in the Dairy."

That we may count upon microbes sometimes as our friends and sometimes as our enemies is well illustrated in the bacteriology of milk and milk products. Though milk may leave the udder perfectly sterile, yet a few moments of contact with the air, and especially the air of insanitary surroundings, are sufficiently long to be the starting-point of the development of a whole microbial menagerie. By fission alone—that is, by splitting in two, and by the resulting two dividing again in the same way—one bacterium may become the parent of over 16,000,000 bacteria in twenty-four hours. The composition of milk is such as to be most favorable

to the growth and development of organisms, pathogenic and non-pathogenic. Some are detrimental to the healthy condition of the milk itself, or, in other words, milk has its own diseases to contend with. Experience is ever teaching how imperative it is that the strictest care should be taken to protect milk against the possibility of microbial invasion. The risks of pollution are great, and may arise from an unhealthy or dirty condition of the cow, or of the stall, or of the milker's hands and clothes. The air of the cow-house is frequently made insanitary by cleaning it out and dislodging dirt just previously to milking, and another source of contamination is the diluting of the milk with unwholesome water which may be infected with typhoid fever or cholera poison, or by placing the milk in dirty vessels, or by exposing it to the atmosphere of warm and unhealthy places, as cupboards. With these possibilities of pollution in mind the advantages gained by sterilizing or Pasteurizing milk by boiling are evident. Particularly is this so in the case of bottle-fed infants, the lives of many of whom would be saved from fatal diarrhœa, so frequent in artificial rearing, were these precautions taken. The same lesson is taught by the fact that mother's milk is sterile. Although boiling will destroy the disease-producing germs in milk, it may still leave spore-bearing bacteria, which in course of time would produce undesirable changes in the milk itself and render it unwholesome. On the other hand, there are friendly germs to be found in milk whose functions can be cultivated and turned to account in the production of an acceptable flavor in cream and in butter. After clearing the milk or the cream of competing organisms by Pasteurism it is sown with a pure culture of lactic acid producing organisms. The flavor of the butter and, moreover, its keeping qualities being dependent upon the character of the souring process undergone by the cream preparatory to churning, a uniform product acceptable in both these respects may be obtained by proceeding carefully on these lines. The inculcation of these methods among dairy farmers would add an impetus to the milk products industry, and probably bring it into a greater state of prosperity. It is satisfactory to record that efforts are already being made to do this by lectures and the publication of lectures in pamphlet form and in the agricultural papers.—*London Lancet*.



COMMUNICATIONS.

Deep and Shallow Wells.

BY H. B. BASHORE, M.D.,

West Fairview, Pa.

IN the older works on hygiene it was customary to draw a great distinction between deep and shallow wells ; deep wells being those which pierced an impervious strata and drew water from a deeper layer beneath.

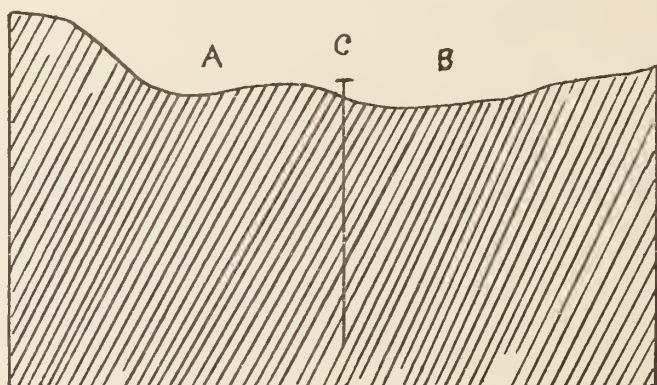
Modern geological investigation has shown that this distinction is of very limited value, since a deep well can really only occur in a geological basin, and geological basins are few and far between.

At London and Paris there happens to be just such a formation, and there, consequently, deep wells are of great value and a great improvement over shallow ones. On Manhattan Island, on the other hand, a well may be a thousand feet deep and still not be a deep well, in a sanitary sense, for the strata there are more or less perpendicular, which, of course, in a measure, excludes an impervious layer ; so it is over almost the whole of the vast Appalachian region.

In the flood plains, which border many streams of northern regions, there is frequently an upper layer of almost impervious clay, and by drilling through this one is able to obtain approximately a deep well-water ; for this thick heavy clay excludes surface waters ; but over the sandstone and slate lands one would have to go very, very deeply to find anything approaching an impervious strata.

In a region of upturned layers wells are especially dangerous, for the intervals between the rock layers afford a most excellent drain for any surface or cesspool waters if the strata happen to incline to that direction, and the deeper the well the more extended is the danger. This is illustrated by the following practical sketch which represents a region of upturned strata.

In places like this it makes a great difference whether a privy or cesspool is located at A or B, if the well is at C; if at B, or any direction within ninety degrees on either side of B, the well will almost certainly be contaminated; the only possible location for a filth receptacle in relation to C is in the direction of A. Yet it is very rare for such points to be considered in drilling a well, but they are of vast import if one expects pure water.



I know of a well situated in a region like the above,—a tube-well eighty feet deep, with the upper twenty feet surrounded by an iron tube, and yet this water yields 2.4 parts of chlorine per 100,000, while the normal chlorine of the region is less than one part per 100,000; the adjoining privy is situated within the region indicated by B in the sketch, and, of course, the well is polluted.

In using wells for procuring drinking water, much more attention should be paid to the geological character of the strata than to the convenience of the household.

Geology used to be thought an ornamental study, but it is a very practical one when it comes to drinking well water.

Fever Nursing and the Nursing of Contagious Diseases.¹

BY H. A. ARNOLD, M.D.,

Ardmore, Pa.



WITH a display of generosity, that is as embarrassing as it is liberal, the committee has assigned me a topic for this afternoon's talk, which has at least one point of resemblance to the cycle of time,—in that it scarcely admits of either beginning or ending. Hence, as my theme draws out its weary length, and feelings of impatience assert themselves, lay not the blame on the unwilling lamb led to this afternoon's slaughter, but rather let your indignation burn towards those who assigned him so complex a subject.

FEVER NURSING.

The cleverest work of the artist ever has a reality to furnish the inspiration. Perhaps our understanding may be quickened, and our interest intensified, by allowing a case from my note-book to transport us to a home where trouble, anxiety—aye, perhaps, even the grim messenger of death—have been the unwelcome, unbidden guests.

"The boy has been growing too fast." "His appetite has not been very good for a week or two." "We did not think he was sick enough to call you in before, but as he don't improve, we think you had better see what is the matter with him." Then follows the discovery of fever.

"Cold tremors come, with mighty love of rest,
Convulsive yawnings, lassitude, and pains."

The disease has a start of more than a week, and our patient is already weakened by the fever process, and the abstinence occasioned by a defective appetite. We must ever bear in mind that the fever is an internal fire, whose fierce heat is maintained at the expense of living tissue. With such food for fuel, debility, if not utter prostration, must soon be the inevitable result.

¹ One of a course of lectures on nursing.

Now starts the battle between contending forces,—*destruction* on the one side, *reconstruction* upon the other.

Sick-Room.—Knowing that our patient's incarceration will necessarily last for some time, we will transfer him to a room remote from noises and kitchen odors; with white-washed or painted walls; affording ventilation without draughts, and sunlight without glare. The floor we will cover with rugs instead of a carpet. For curtains we will have a material that may be washed; all superfluous furniture shall be removed from the room; the bed shall be the most comfortable the house affords; and now, thus early in the illness, we will see that the room may be heated at a moment's notice, in case the weather should demand it.

Annoyances.—We will remove that noisy clock from the bureau, and in its stead place a good noiseless watch.

If we must have a stove in the room, we will manage it so that it will require attention as seldom as necessary. Water will be kept on top of it to provide moisture, and the coal will be brought up to the room in small paper bags, which may be placed on the fire without any noise.

The light shall enter towards the side of the patient's bed during the day, and the lamp shall be so placed at night.

We will exclude all high-pitched, loud talking, also all whispering, all exciting topics of conversation; also depressing news, too many and injudicious visitors, and have no more passing to and from the room than is absolutely necessary.

Nurse.—Our nurse has been so fully described to you that I forbear to do more than give you the following picture of the colored nurse of the South: "Possessed of polished manners, and a soft, sweet voice, she retains her self-possession at all times. Moving about with soft-slipped feet, her very presence in the sick-room is a harbinger of rest. And, as she deftly passes her hand over the fevered head, and rubs the aching limbs, you would say as we have often told her, 'Ah, nurse, you have virtue in your hands,' and hear the quiet response, 'Yes, missus, I smothered a mole in my hands; and when I rubs, I always bring the misery straight along out; I never rubs up,—that turns it back again.'"

Diet.—Having made these provisions for our patient's comfort, we come to a consideration of his diet.

Tempting dishes are presented in vain, the appetite is dormant. Easily digested liquid or semisolid food must be given

frequently in small quantities. Our 14-year-old patient does not object to milk, hence we will make it the basis of our diet list. We will keep it well covered, in a cool place, in another room, away from contaminating odors; and, having ascertained the amount demanded by our patient's condition, we will distribute it over the entire twenty-four hours, so that we may frequently present him a bright, clean glass, about one-third full. If we fill the glass he will either drink too much and too rapidly, or else refuse it altogether, declaring he "cannot drink all of that."

We will not ask him what he desires in the way of permitted dainties, but will serve small quantities in the neatest, most appetizing manner possible, and as there is "so little of it, of course, he can eat it."

We will endeavor to so arrange his menu that there shall not be too much repetition.

To alleviate the insatiable thirst, he may indulge moderately in broken ice or water,—cool, clean, fresh, and pure; and, lest he drink too much at any time, we will present it in a *tumbler* only partially filled.

Do not overfeed (cram), thereby impairing digestion already weakened. Let all foods be given slowly. Aim to counter-balance tissue waste.

So much light and information upon this subject were dispensed one week ago as to make it unnecessary for me to do more than refer to a few of the highly-nutritious, easily digested dainties, the blessed fruitage of that friendly rivalry between kitchen and laboratory. Such are prepared foods, broths, beef extracts, sterilized milk, koumiss, etc.

Cleanliness of Person and Bedding.—Bacon says, "Cleanliness of body was ever esteemed to proceed from due reverence to God;" whence arose the familiar expression "cleanliness is next to godliness." Extreme attention to this matter, under the obscure designations *asepsis* and *antisepsis*, has enabled the surgeons of the present day to accomplish results undreamed of by their fathers. I venture the prophecy that the prolongation of human life will find its accomplishment in a closer attention to cleanliness of food and person, and more strenuous efforts to reduce to a minimum the "peck of dirt," which every one is supposed to eat.

We will *sponge* our patient daily, thereby assisting the action of the sweat-glands—those sewers of the system—in their double

function of removing harmful materials, and, what is equally important, reducing fever. Should the room be cold, we will not expose the entire body at once, but will protect all except the part receiving attention. Each part will be carefully and softly dried with gentle, yet stimulating friction.

Prevention of Bed-Sores.—We will frequently apply whiskey and alum, or a weak infusion of oak-bark, to those portions of the hips, shoulder-blades, and back of the neck, where there is so little fat and muscle interposed between the bones and skin that bed-sores are likely to follow a lengthy confinement to the bed.

As the bedclothing soon becomes heated and soiled by the perspiration and other discharges, we will endeavor to make daily changes of sheets and pillow-cases, with as little disturbance of our patient as is necessary. All lumps and creases in the sheets shall be quietly, yet frequently, straightened out, adding much to the comfort of the restless, tossing sufferer.

Discharges.—We will make it an inflexible rule to remove from the sick-room, as speedily as possible, all discharges. The vessels used to receive such discharges shall be thoroughly cleansed with boiling water, and rinsed out with a disinfecting solution of chloride of lime, corrosive sublimate, or some other equally potent germ destroyer. These discharges will be conveyed some distance from the house and well (if the drinking-water come from such a source), and emptied into a hole dug for this especial purpose, and covered by a few shovelfuls of earth or lime. This hole shall also be the receptacle for all the water used in sponging our patient.

Massage.—A quiet, systematic kneading or rubbing by the bare hand or by brushes, pads, etc., stimulates constructive tissue-change, sends the blood coursing through parts where it has been flowing sluggishly, builds up the system, and thereby tends to shorten the tedious convalescence from fevers and other wasting diseases.

With these general remarks, applicable to all forms of fever alike, we will particularize, and consider briefly a few

SPECIAL DISEASES.

Typhoid Fever.—Because of its frequency and the great care and assiduity required on the part of the nurse, we will consider our patient to be the victim of that dreaded malady of young adult life,—typhoid fever.

It is just nineteen days since the illness began, and ten days since treatment was instituted. We have been carefully and painstakingly following the line of nursing just described, and our patient is fairly strong, and has little to complain of except weariness and enforced confinement to bed. We congratulate ourselves, and are correspondingly hopeful. As evening approaches the pulse bounds upward, and the fever increases; delirium manifests itself and familiar faces are not recognized; thumb and finger are busily engaged with excoriated lip and spongy gums until, perhaps, a tooth is forcibly withdrawn and handed to the anxious nurse. Our patient has a hot, dry skin, and his restless tossing is varied by persistent efforts to get out of bed. The vague fancies that find lodgement in his unbalanced brain, awaken a wild delirium, bordering upon frenzy. His tongue is parched, and the dry, shrunk lips disclose teeth that are so covered by offensive sordes that their pearly hue is completely lost to sight. His temperature is pronounced to be 105° F. What is to be done?

To assist the action of the antipyretic medicine ordered, we will give him a cold sponging or put him in a wet pack. We will carefully remove the offensive matters from teeth and tongue by means of lemon-juice, or vinegar and water. We will frequently moisten the mouth and tongue with glycerin and water. Presently our patient grows quieter, the skin moistens; the pulse loses its hard, tense character; drowsiness manifests itself, and sleep follows; and as we watch the hours go by we praise the means that enable us to thus bring rest to the weary.

Now comes the period when life hangs in the balance. Husband your strength, oh, tired watcher, and secure the much needed rest, that you fail not in this trying hour. Have a competent substitute fill your place, while you enjoy a breathing spell in the open air, also sufficient refreshing sleep.

With the subsidence of fever we see its direful effects. The strength of delirium is gone, and in its stead we have prostration, utter and complete. This is the time for predigested foods. This is the time for alcoholic preparations which, by their absorption without digestion, both nourish and stimulate.

Convalescence.—As hope begins to fail, and the heart sinks, we are cheered and rewarded by seeing the fruits of our labors. The intellect clears, the eye brightens, the digestion improves, sleep comes without solicitation, and the appetite becomes im-

moderate. Indeed, our patient is clamorous for solid food. He complains bitterly of the sloppy foods he has been getting, and asks for bread,—but be careful lest you “give him a stone.” Many a loved one has been rescued from the jaws of death, only to receive his quietus, in the shape of a piece of cake, an apple, or a piece of hard-crust bread from some sympathetic, over-considerate, misguided, ill-advised, meddling *friend*, who thinks “it is too bad to keep starving him by giving him nothing but milk,” and slyly administers the coveted but forbidden article of food, which bursts its way through the ulcerated bowel, and adds another victim to the *dreadful malady*.

When I tell you that the death-rate of typhoid fever has been reduced more than 50 per cent. within the last half century, you will realize the advantages of intelligent co-operation between physician and nurse.

There are other and quite serious fevers that require skilful nursing, but the time at our disposal is too brief to particularize, hence we pass to a consideration of

CONTAGIOUS DISEASES.

Under this head we include such diseases as are communicable from one person to another through a subtle agency invisible to the unaided eye. Familiar examples of contagious diseases are small-pox, chicken-pox, scarlet fever, diphtheria, measles, whooping-cough, and mumps.

Isolation.—The first thing to be done when the illness is of such a character that one of the above mentioned or any other contagious disease is suspected, is to remove the patient to a portion of the dwelling remote from both the sleeping- and living-rooms. This one thing I would impress deeply upon your minds, that early and complete isolation of contagious diseases offers not only a certain means of preventing their spreading, but also a hope of effectually stamping them out of existence.

The nurse having such patients in charge should refrain, as far as possible, from mingling with the family. She should be comfortably clothed with linen or cotton fabrics. A nurse-cap and an apron of good size should be worn in the sick-room, and removed upon leaving it. Never leave the sick-room without first washing the hands. All articles of bed-clothing or wearing apparel should be kept apart from the family washing. The same care applies to dishes and glassware handled by the patient.

Ventilation.—Ventilate the sick-room to the greatest possible extent consistent with the patient's safety.

Diet.—The diet should be that of the fevers in general. Milk, gruel, broths, cracker victuals, beef extracts, prepared foods, are all permissible. Fresh sweet oranges I allow freely.

Small-Pox.—In small-pox we have a disease which rapidly undermines our patient's strength by reason of the great number of pustules, or little boils, that are formed. Hence, a strongly supporting diet is essential. Stimulants may also be required.

The eruption may be greased with any mild, soothing ointment, or oil.

Scarlet Fever.—The ordinary fever diet, accompanied with lemonade or some other diuretic drink, that the kidneys may not become clogged in their efforts to do double duty. For, be it remembered, that the skin fails in the performance of its function when much of its surface is involved in the scarlatinal eruption.

Put the patient to bed as soon as the disease is recognized, and keep him there until the skin has scaled off. Sponging with tepid water once or twice a day will afford much relief, especially if we follow the sponging by a greasing with olive oil, unsalted lard, or mutton suit.

Burn all scales found in the bed when the skin is exfoliating, also all sweepings of the floor. Bury all water used in sponging. Whereas in small-pox, chicken-pox, scarlet fever, and measles the principal source of contagion arises from the matters thrown off by the skin; in diphtheria, whooping-cough, and mumps it is different, and everything "that proceedeth out of the mouth" should be regarded with suspicion. In diphtheria especially should we be careful to receive all matters expectorated and vomited in suitable vessels containing strong, disinfecting fluids.

With this imperfect notice of contagious and special diseases I am compelled to bid our subject adieu.

A few parting words. A safe rule to follow is to leave the diet, in all serious diseases, entirely in the hands of the attending physician, and give only such things as he may direct.

Do not undertake or assume too much. When a doubt arises, always let the physician settle it. Do not think it implies a want of ability if you find it necessary to ask for instructions. The doctor's confidence in you will increase if he sees you show an anxiety to make this auxiliary of medicine contribute its full

share to the accomplishment of the cherished desire of every honest physician,—the speedy restoration to health of those confided to his care.

United States Supreme Court, Justice Brown on Longevity.



ON. H. B. BROWN, one of the Justices of the Supreme Court of the United States, contributes the following communication on longevity to THE ANNALS OF HYGIENE :

SUPREME COURT OF THE UNITED STATES,
Washington, January 6, 1896.

Editor of THE ANNALS OF HYGIENE.

DEAR SIR :—In replying to your letter of December 30, I fear that I shall not be able to give you any information which will be of value in seeking to account for the fact that “Justices of the Supreme Court have been, as a rule, exceptionally long-lived men.” Perhaps it is sufficient to account for it that they are not usually appointed under fifty, and would naturally be selected somewhat with reference to their health.

There have been, undoubtedly, men of exceptional longevity upon this bench, but I am inclined to think the popular belief that they are, as a rule, especially long lived is without much foundation. In the past eight years there have been eight deaths, or an average of one per year, and at present there is but one member of the court who is over 70 years of age.

If it be true that judges are longer lived than other men, I have no doubt it is due largely to the absence of worry and anxiety, which are so fatal to men in business and professional life. At the same time human life is so uncertain, invalids frequently live so long, and strong men are so frequently stricken down suddenly, that it is difficult to formulate any rule to account for longevity. My own impression, however, is that the good health of men in advanced years is due to a naturally good constitution, regularity of habits, abundance of exercise, early hours, moderation in eating and drinking, work without fatigue, and work of a kind that engages rather than harasses the mind. Perhaps of as much importance as any other is a willingness to confess it when one is ill, and promptness in applying for the best medical advice. I regard a moderate amount of exercise in the open air as the one thing indispensable to good health in *men*.

Very truly yours,

H. B. BROWN.

Physical versus Mental Overstraining in Children.

BY ARISTIDES AGRAMONTE, M.D.,

New York City,

Physician to the Children's Department of Bellevue Hospital (O. D. P.) and the West Side German Dispensary ; Fellow of the New York State Medical Association ; Member of the Medical Society of the County of New York, of the New York County Medical Association, etc.

AT any time in life excessive and continuous mental exertion is hurtful ; but in infancy, when the cerebral structures are still immature and delicate, permanent injury is more easily produced by injudicious treatment than at any subsequent period. In this respect, the analogy is complete between the brain and other parts of the body, as is exemplified by the injurious effect of premature exercise of the bones and muscles. And I beg you bear with me while I relate an incident which illustrates the purport of this paper and led me to investigate a most transcendental error, that of mental over-stimulation in children.

During a visit to a friend in the country, I was enjoying a walk in the garden before breakfast on a delightful morning in June, when my attention was suddenly arrested by the pensive attitude of a little boy, the son of my host, whom I observed standing before a rose-bush which he appeared to contemplate with much dissatisfaction. Children have always been an interesting study to me, and yielding to a wish to discover what had clouded the usually bright countenance of my little friend, I inquired what had attracted him to this particular rose-bush, which presented a forlorn appearance when compared with its more blooming companions. He replied, "This rose-bush is my own. I have taken great pains with it, and hoped to have had many fine bouquets from it ; but all my care and watching have been useless ; I see I shall not have one full blown rose after all.

"After watching it for some time," he continued, "I discovered a very great number of small buds, but they were almost concealed by the leaves which grew so thickly ; I therefore cleared away the greater part of these, and my little buds looked very well. I now found, as I watched them, that, although they grew larger every day, the green outside continued so hard that I thought it impossible for the delicate rose-leaves to force their

way out. I therefore picked them open ; but the pale, shrivelled blossoms which I found within never improved and died one after another. Yesterday morning I discovered one bud which the leaves had till then hidden from me, and which was actually streaked with the beautiful red of the flower confined in it. I carefully opened and loosened it in the hope that the warm sun would help it to blow. My first thought this morning was of the pleasure I should have in gathering my one precious bud, but look at it now !”

The withered, discolored petals to which the child pointed, did indeed present a melancholy appearance, and I now understood the cause of the looks of disappointment which had at first attracted my attention. I explained to the over-zealous little gardener the mischief which he had unintentionally done by removing the leaves and calyx with which nature had covered and inclosed the flower, until all its beauties should be ready for full development ; and having pointed out to him some buds which had escaped his care I left him full of hope that by waiting patiently for nature to accomplish her own work, he might yet have a bouquet of his own roses.

As I pursued my walk, it occurred to me that this childish incident suggested an answer to the question asked by Dr. Johnson, “ What becomes of all the clever children ?” Too often, it is to be feared, are the precious human buds sacrificed to the same mistaken zeal that led to the destruction of the roses which had been expected with so much pleasure by their little owner. Perhaps a few hints suggested not by fanciful theory, but gathered here and there from the practical experience of those better than I versed in mental and physical training of children, may help to rescue some little ones from the blighting influences to which they are too often exposed.

We have mentioned that the laws by which the physical development of every infant, during the earliest period of its existence, is regulated, seem to afford a striking lesson by the analogy they bear to the laws on which the subsequent mental development depends ; and by the wise arrangement of nature this lesson is made immediately to precede the period during which it should be carried into practice.

On the babe’s first entrance into the world it must be fed only with food suitable to its delicate organs of digestion ; on this depends its healthful growth and likewise the gradual strength-

ening of those organs. Its senses must at first be acted upon very gently ; too strong a light or too loud a noise may impair its sight or hearing for life.

The little limbs of a young infant must not be allowed to support the body before they have acquired firmness sufficient for that task, otherwise they will become deformed and the whole system weakened ; and last, not least, fresh and pure air must be constantly inhaled by the lungs in order that they may supply vigor to the whole frame.

All family physicians should make their clients acquainted with these inexorable laws of nature ; all enlightened parents generally act on them ; but when, owing to judicious management, their children emerge from babyhood in full enjoyment of their animal organs and with muscles and sinews growing firmer every day in consequence of the exercise which their little owners delight in giving them, is the same judicious management extended to the mind of which the body, which has been so carefully nourished, is only the outer case ? In too many cases it is not.

Children are sometimes met with, though few and far between, whose minds seem ready to drink in knowledge in whatever form or quantity may be presented to them ; and the testimony of Dr. Coombe as well as of many other well-known writers, proves the real state of the brain in such cases and also the general fate of the poor little prodigies.

Such children, however, are not the subject of these remarks, of which the object is to plead for those promising buds which are closely encased in their "hard" but protecting covering ; to plead for them especially at that period when the "beautiful red streak" appears,—in other words, when, amid the thoughtless sports and simple studies of childhood, the intellect begins to develop itself and to seek nourishment from all that is presented to it. There exists at the period alluded to a readiness in comparison and a shrewdness of observation which might be profitably employed in the great work of education. And here it may be observed that as to "educate" signifies to bring out, the term "education" can only be applied with propriety to a system which performs this work, and never to one which confines itself to laying on a surface work of superficial information unsupported by vigorous mental powers.

Too often the tender mind is loaded with information which

it has no power of assimilating, and which, consequently, cannot nourish it. The mental faculties instead of being gradually exercised are overwhelmed; parents who would check with displeasure the efforts of a nurse who should attempt to make their infant walk at too early a period are ready eagerly to embrace any system of so-called education which offers to do the same violence to the intellect; forgetting that distortion of mind is much more to be dreaded than that of the body, since no orthopædic appliance will straighten out an intellect which has developed more or less deviated from the right course.

Information may be acquired at any age, provided that the intellectual machinery has been kept in activity or not been overworked; whereas, if it has been allowed to rust or stiffen from disease or pushed till its bearings have worn out through constant friction, the efforts of the man (supposing him to have energy sufficient to make an effort) to redress the wrongs done to the boy will in most cases be in vain.

That self-educated men are generally the best educated is a trite remark, so trite, indeed, that it frequently falls on the ear without rousing attention to the apparent paradox which it contains, and yet there must be some reason well worthy of attention, for the fact that so many who, in early life, enjoyed advantages have, on reaching manhood, found themselves surpassed by others who have been forced to struggle up unassisted, and in many cases surrounded by apparent obstacles to their rise.

It is obvious that the point in which the latter have the advantage is the necessity which they find for exercising their own intellectual powers at every step; and, moreover, for taking each step firmly before taking the next; which necessity, while it may retard the rapid skimming over various subjects, which is sometimes effected, gives new vigor constantly to the mind and also leads to the habit of that "industry and patient thought" to which the immortal Newton attributed all he had done; while at the same time a vivid pleasure is taken at the acquirement of knowledge so obtained, beyond any that can be conferred by reward or encouragement from others.

From these considerations it appears that the most judicious system of education is that which rather directs the working of the average child's mind, that works for him, at the same time that restrains or inhibits the cerebral functions of the unusually clever or physically enfeebled; and it must be remembered that

such a system, compared with some others, will be slow, though sure, in producing the desired effect.

Every one familiar with children must have observed with what apparently fresh interest they will listen to the same tale repeated again and again. Now, if time and repetition are necessary to impress on the young mind facts interesting in themselves, they are surely more necessary when the information to be imparted is in itself dry and uninteresting, as is the case with much which it is requisite for children to learn. The system here recommended is one which requires patience and care on the part of parents and teachers ; but care and patience so exercised would undoubtedly be rewarded by the results, one of which would be, that we should not so frequently see “clever children” wane into very commonplace if not stupid men.

It is the duty of every family physician to observe the bent of each particular little patient's mind, and when, as in the case of an unusually bright child in his opinion, it is over-stimulated, to interfere and advise a less active system of education or even an inhibitory one if necessary. This is, in my opinion, as much his duty as it is to direct the feeding, or the clothing, or the general management.

144 WEST SEVENTY-NINTH STREET.

The Problem of Work.

BY E. C. BAILEY, C.E., M.D.,
Yardley, Pa.

(Continued from February issue.)

PART II.



THE few dietetic sins of daily commission mentioned in the first paper of this series do not adequately explain the existence and increase of the widely prevalent national ailment,—dyspepsia. The present state of the evil is not the result of modern agencies alone. Another cause may be found in the history of preceding generations. The dyspeptic tendency is an inheritance as well as a recent acquisition. The fathers have eaten sour grapes and the children's teeth are set on edge.

Our ancestors were a hardy people. Bold to attack, strong to resist, fearless in danger, cool in battle, and wise in council, they were eminently fitted for the work of overcoming the hostility of man and of nature, and laying the foundation of a stable form of government. The pioneer's Old World endowment of reserve power was bountiful and his coefficient of energy correspondingly high; and the offspring, fruit of his loins, that filled the humble habitation to overflowing, showed themselves capable in their turn of reproducing their own perfections. The manners and customs of those primitive times were simple and for the most part conducive to the well-being of the race. Materially modified in character and vastly augmented in number as civilization advanced and wealth increased, the original catalogue is to day considered to be the expression of the highest order of public virtues and the most commendable of personal traits. Honest, industrious, conscientious, God-fearing men and women, though as a rule somewhat intolerant withal, our progenitors wrought patiently and well, and their children even now rise up to call them blessed.

One feature of the daily life of old, however, did not bear transplantation and acclimation well. A comparatively harmless plant, we are told, when growing in native soils, it has been gradually transformed under the far different conditions here present into a noxious weed, the poison of which has compassed more ruin and death than war, pestilence, or famine, or the three combined. The almost universal use abroad of alcoholic beverages in one form or another does not seem to have materially lowered national physical standards. In England distilled liquors have been freely consumed by all classes for centuries, and the Briton's appetite and digestion are apparently unimpaired,—the marvellous energy he displays in the effort to explore, subdue, colonize, and develop is the admiration of the whole world, and bespeaks a high degree of nutritive perfection. A distinguished American writer of the last generation, in a description of his first visit to Europe, made mention of the rather singular fact that the effect of a quantity of liquor, the ingestion of which in New York would have produced marked evidence of gross excess, was only mildly exhilarating when drunk in London; something in the climate seemed to insure immunity from intoxication. But the Englishman's "pegs" of brandy and soda, apparently innocent at home, are not innocuous elsewhere. Although John Bull has wrung unparal-

leed concessions from king alcohol, even British diplomacy, masterful as it is, has failed to extend the operations of the "favored nation" clause beyond the boundaries of the United Kingdom. Across the seas John Barleycorn exacts with as rigid impartiality his tithes from Victoria's expatriated subject as from the native Yankee, and the deeply jaundiced complexion of prolonged tropical colonial services is no less suggestive of an Indian hepatic revolt than the Lucknow medal of the Sepoy mutiny.

The first settler found the New World presenting its own distinctive features. The climate and soil were unlike those to which he had been accustomed, and an adequate protection from the rigors of the one and the proper cultivation of the other entailed radical changes in the habits of life and methods of work. Time passed, and the ranks of the pioneers were swelled by immigrants speaking strange tongues, and a process of assimilation began. The representatives of various nationalities, living and laboring side by side, associating and after a while intermarrying, gradually lost their racial peculiarities. Denationalized aliens became naturalized citizens, and one in rights, privileges, and aims, subjected to the action of the same modifying agencies, grew more alike as the years rolled on; and out of a once heterogeneous mass the operations of natural laws evolved at length a new composite type, unique in many respects. Of the numerous distinctive characteristics possessed by the typical American, one only need be mentioned here,—viz., an intolerance of alcohol. The native liver is quick to resent even moderate indulgence, and free ingestion is usually followed by well-marked gastro-intestinal disorder. Nor is the brain less susceptible. Under like conditions it too rebels, and perverted function of intellectual and motor centres soon brings about a state of mind and body easily recognized by the most indifferent observer. The worker's lack of physical powers of resistance is nowhere more strikingly displayed than in the utter demoralization of co-ordination produced in a mere skirmish with the cohorts of the alcoholic potentate.

The belief is often expressed, if not sincerely entertained, that the old-time immunity from the evil effects of alcoholic indulgence is to be explained upon the theory, stated as fact, that the liquor then consumed in large quantities was absolutely pure, and that the rapid degeneration of the modern drinker is, for the most part, the work of the drugs and chemicals with

which his favorite beverages are adulterated. Return to primitive standards of purity and temperance will be the almost universal rule, and intemperance the notably rare exception ! Of this we are assured.

That much of the liquor of to-day is sophisticated may be, and probably is, not untrue,—at all events this seems to be the common belief. But that all of it is impure can hardly be credited. It is unlikely that the intense commercial rivalry, so marked a characteristic of this money-loving age, would long refuse to supply an article for which there must be a demand. If some be pure, the manufacturers and experienced dealers should escape the usual penalties of indulgence on the theory that it is the adulterants that make the trouble, since these classes above all others should be able to recognize and obtain it ; yet they suffer in common with their patrons. Moreover, upon the same hypothesis, the consumers of pure alcohol, diluted to taste, ought to be as free from the gastro-intestinal and nervous disorders produced by the distilled spirits now everywhere on sale as were our ancestors ; but there is no evidence to show that the contrary is not the case. The fact is that it is in the drinker and not in what he drinks that the explanation of the discrepancy is to be found. Other things being equal, the measure of the toxicity of a given brand of the article in question is that of the proportion of alcohol the specimen contains. The adulterants are responsible for but little of the injury inflicted.

If history and tradition are to be believed, our forefathers were given to alcoholic excess. Within the memory of some now living, the decanter of wine and bottle of stronger waters were never absent from the sideboard of the well-to-do ; and cool indeed was the reception accorded the most casual visitor that did not include an urgent invitation to partake of their cheering contents. Rum was a *sine quâ non* of every function of a social, political, or business nature. All classes drank freely as a matter of course. There was no disgrace attending intoxication, provided the victim brought on the condition without violating the rules of bibulous etiquette. The clergyman in those good old days was considered to be the incarnation of all the Christian graces, and regarded with reverential awe as one of the favored few whose calling and election were sure ; yet even so exemplary a member of the best society as he occasionally indulged to an extent that, if practised to-day, would cause him to be stripped

of his ecclesiastical robes and close to him the doors of every respectable household in the community. And to the prevalence of those pernicious habits the present generation owes much of its dyspeptic tendency.

The undermining process has been slow. As the evolution of the American type progressed, the reserve steadily diminished and the effect of bibulous propensities became more apparent. The store of inherited vigor of each generation fell below that of its predecessor and was subjected to still greater strain. However insignificant the sum annually subtracted from a goodly fortune, a continuation of the process will eventuate in bankruptcy. The advent of disaster may be far distant, postponed, perhaps, until the final remnant is held by an heir born a century later; but the dire result is inevitable,—the last dollar will ultimately be spent. As the figures upon the credit side of the ledger decrease, the income from the amount they represent is lessened, and the necessity for marketing a gilt-edged bond or block of dividend-paying stock to provide for current expenses arises more frequently; and ruin at length ensues. In like manner the surplus vigor of succeeding generations became progressively smaller and the calls, responded to only at the expense of the contingent fund, came oftener; and in the absence of any factor of sufficient compensatory power, the rapidity of the downward movement continually increased. To-day, in answer to the oddly-phrased query recently propounded by an eccentric member of Congress desiring to orient himself and his party, it may without exaggeration be said that there are many all about us that are perilously near the insolvent line. Infants require the most pains-taking care, medical as well as maternal, lest their lives be sacrificed to pay the debt to nature contracted by former generations and permitted to accumulate at compound interest; children of tender age in whom the uric acid diathesis is well marked are anything but uncommon; and the bread dyspeptic, lithæmic, and the distinctively gouty are everywhere to be found. The sins of wilful excess, gross carelessness, and inexcusable ignorance on the part of the fathers are being visited in full measure upon the present generation! And the end is not yet!

An investigation of the home brings to light other potent causes of a malnutrition so widely prevalent that chewing-gums and non-alcoholic beverages owe much of their popularity to the alleged admixture of anti-dyspeptic remedies. The prophecy of

old is fulfilled to the letter, "A man's foes are those of his own household."

The well-housed worker of to-day, contemplating the dwellings of olden time, is puzzled to understand how it was that people lived, thrived, and found much genuine enjoyment in those more primitive structures, especially during the winter months. Except upon extraordinary occasions, artificial heat was confined to one room, wherein all the members of the family gathered to share its cheery glow. The picturesque fireplace, piled high with blazing logs of hickory or beech, is still the theme of the orator, philosopher, and poet. As a ventilator it has never been surpassed, but as a source of caloric for general comfort it was a signal failure. Sleeping apartments were never warmed. It was not uncommon at morn to find the coverlet well sprinkled with snow that had sifted in through the chinks and crannies left by careless craftsmen. It is not surprising that cleanliness was then accounted next to godliness, when zero weather without precluded the possibility of a combination of comfort and privacy within, and made the hour set apart for the daily ablution a truly penitential season. The mortifications of the flesh attending the removal of material stains could hardly have been much less severe than those endured in attaining a corresponding degree of purity of heart. If corporeal freedom from what the scientist defines as "matter out of place" be an essential factor of the process of purgation from sin, there is no mystery obscuring the original signification of the saying, "The good die young." There was abundant reason for an early and untimely demise. Tuberculosis and spirituality went hand in hand!

A striking contrast, the home of to-day is for the most part comfortable, convenient, and attractive. The demands of the toilet and the calls of nature are satisfied without exposure or suffering. The living-rooms are commodious, cheerful, and inviting, everywhere displaying evidence of good taste in furnishing and decorating, and no little skill in combining utility and beauty. To the patriot of '76, could he return to earth to-day, the best of modern tenements occupied by wage-workers would seem little short of palatial.

But in the march of improvement, the kitchen has been left behind. A few new appliances have been generally adopted, and here and there a well-appointed, scientifically-conducted culinary

department may be found. Ordinarily, however, the utensils are primitive in fashion and scant in number, and the methods in vogue out of date. Shunned by the mistress of the household, to whom its duties are profound mysteries or uncongenial and irksome tasks, it is not infrequently given over to the undisputed control of incompetent and irresponsible servants, where the purse is sufficiently plethoric; and among the less favored of fortune, where the whole work of the house devolves upon the wife and mother, the practical results obtained are no better. As a rule, the quality of the food supplied the family table is poor.

Progressing civilization has wrought sundry changes in man's physique, the needs of which have been correspondingly modified. Having lost much of his original endowment of reserve power, the worker is no longer able to digest whatever appetite may crave or caprice suggest to the purveyor, and he suffers unless the food consumed is well adapted to the peculiar features of his enfeebled condition. Culinary art, advancing at snail's pace, meets the more highly specialized demands of to-day with a supply of yesterday's obsolete type. The underfed body asks for bread and is given a stone, or something closely akin thereto so far as the epigastric sensations following its ingestion are concerned. The old-fashioned stage-coach is better adapted to the wants of this mile-a-minute age than the average worker's antiquated fare to his *fin de siècle* needs. Yet wonder is expressed that he is so often distanced in the race for material success!

The factors of rest, recreation, and sleep, the perfection of each of which is so essential in maintaining bodily vigor, are also neglected in the intense activity of modern life. The same bustle, excitement, and hurry characteristic of business obtain in society as well. Set free from labor, the worker is prone to carry pleasure to excess. The closely-confined clerk or employer, starting away upon his vacation, determined to make the most of the limited time at his disposal, indulges in undue exertion, walks, rides, and bathes inordinately, or camps out in a malarious region, sleeping under insufficient cover, and subsisting upon fare he would scorn to taste at home. Europe or the vast West is "done" in the short space of six weeks, and the excursionist usually returns tired in mind and body and unable to settle down to routine work for days.

Nor does the sleep of the overtaxed worker escape the evil effects of his every-day toil. The brain is over-stimulated and the

condition of hyperæmia thus induced is tardy in disappearing. In this state the inhibitory influences of bodily fatigue are powerless or insufficient, and the cerebral anæmia attending sleep is materially delayed. The slumber that ultimately follows such abnormal wakefulness is perturbed and unrefreshing, largely because of the presence of an undue amount of blood within the cranial cavity. Modern life tends to destroy the equilibrium of function characterizing bodily health, and the resulting inability to obtain an adequate quantity of "tired nature's sweet restorer" is prevalent or uncommon as the demand for speed and power is great or small, respectively. Insomnia is the child of civilization *par excellence*.

The problem of work as it presents itself to-day contains numerous factors of evil omen. The outlook, unpromising enough because of the existence of many adverse elements, is made still more discouraging by the fact that the progressive decline attracts little or no attention. An unreasoning optimism pervades the land,—a blind faith in the continuation of the good fortune hitherto enjoyed. Unprepared for war, a proposition to grapple with an old-time foe, now the undisputed mistress of the seas with every advantage in her favor, is hailed with enthusiasm and contemplated with the satisfaction born of an overweening confidence of victory. As if the saying that "Providence is on the side possessing the most guns" were the silly mouthing of a court-jester, uttered to the accompaniment of tinkling bells, instead of the crystallization of the ripe experience of transcendent military genius, emphasized with the thunder of superb artillery under the direction of the greatest warrior of modern times! The danger of physical bankruptcy is ignored in common with that of foreign aggression. The stock market is the only acknowledged source of apprehension. The reports of the noisy ticker are received with anxious face and bated breath, but the tale of decadence told by the presence of lenses between youthful eyes and the unfolding tape arouses far less interest than the London quotations of "Kaffir" securities. Of the two essential factors of the active worker's capital, money and health, the one is watched and guarded with eternal vigilance and increased with unceasing effort, while the other is foolishly frittered away. The failing birthright of reserve power is traded atom by atom for a mess of pottage, so highly prized that the value of the *quid pro quo* is disregarded or forgotten. Held in bondage by the fascina-

tions of the almighty dollar, man strains every nerve to achieve financial success, with the promise of a result in the not far distant future as unsatisfactory and worthless as that obtained by the Israelites of old who, enslaved by Pharaoh, vainly endeavored to make bricks without straw !

(CONCLUDED IN THE APRIL NUMBER.)

Practical Requirements of Sanitation.

BY U. O. B. WINGATE, M.D.,

Secretary of the State Board of Health of Wisconsin.



HERE are two essentials necessary for the successful administration of practical sanitation, law, and education. No one can have long experience in the administration of sanitary affairs without becoming impressed with the importance of a uniform system of sanitary laws, and the higher the source of such laws the more valuable they are.

The United States are somewhat behind some other nations in this respect, as, for instance, England, which, recognizing the importance of this measure to make her sanitation effective, caused her sanitary laws to emanate from Parliament, and the result is a uniform system that is generally observed and universally respected.

It should be more clearly understood that the scope and function of sanitary laws differ very materially from those of other laws, hence sanitary laws should have not only a broader, but a universal application ; they should be so framed as to meet the requirements of advanced scientific research in the prevention of disease, and be applicable to all localities, not only in one town, city, or county, but in all. If a law requiring vaccination, for instance, is necessary to prevent small-pox in London, it is just as necessary in a city in Wisconsin, Maine, or elsewhere, and the same is true relative to the isolation, disinfection, and sanitary control of other diseases, and the same principle holds good relative to all sanitary provisions, as the abatement of nuisances, protection against contamination of water-supplies, the adulteration of foods, burial and removal of the dead, etc.

This principle is not claimed to hold true in commercial relations, for laws relating to other than scientific matters are based upon other foundations, and if made to operate in the same manner in all localities might often result in hardship and injustice.

It has been argued by some that a uniform system of sanitary laws might work a hardship in certain localities, especially in sparsely populated districts, but it certainly seems to be a sad comment on our boasted civilization to claim that any law which will so operate as to prevent disease and death will cause a hardship. Such argument cannot claim a basis on common sense and surely is the result of insufficient consideration.

The great need of a national system of sanitary laws, placed under a national head, is clearly seen by every practical sanitarian in this country. The laws enacted by local authorities are continually subject to changes according to the whim of any petty politician who sees his self-aggrandizement in any movement that may please a portion of his constituency, and often such legislation is considered without any real knowledge on the subject, and without any consultation with or advice from any sanitary authority, and the latter is too often placed in a most awkward and exasperating condition, in times of danger, between a public sentiment that demands a certain course pursued on one side, and on the other by laws defective or insufficient, which completely handicap him from executing such demands and from doing what science and duty dictate.

A system of laws emanating from Congress, and applying to all localities, would obviate all such troubles and secure for the whole people that protection which our present knowledge indicates, and which is their right. Such laws should be enforced by the State and local boards of health, and in case of their failure or neglect, such attention and assistance from the national powers should be given as the circumstances of the case may require.

It has been argued by some that we need less law for such purposes, and should depend more on the education of the people in sanitary matters, but it seems to the writer that such laws as referred to constitute the best education possible for the people. Justifiable sanitary law is an interpretation of nature's laws,—scientific facts, and nature's laws precede knowledge obtained by education, so far as the great mass of the people are concerned. Again, sound sanitary law is a more substantial and fixed essen-

tial than education in sanitary matters. Such education varies from generation to generation; law is less liable to vary if emanating from the highest legislative power of a country, hence its educational standard is of the greatest value in sanitation. One generation or the inhabitants of one locality may be educated in the means of taking all necessary precautions in preventing an epidemic of a certain disease, as, for instance, cholera, small-pox, etc., because of their experience with its ravages, while another generation or the inhabitants of another locality know nothing about such disease, and it is a strange fact that experience teaches that people will not profit so much by history as by experience, and especially is this true in sanitary matters.

Education will do much to aid in the application of practical sanitation, but judicious, sound laws, emanating from the highest legislative powers, equably, honestly, and reasonably executed and enforced by sanitary authorities created by reason of their fitness, and retained in office without being subject to constant removal for political or other insufficient reasons, will do more, and the two together will constitute the essential factors for the best sanitary protection modern knowledge can furnish.

Constipation; Biliousness; Piles.

BY JOSEPH F. EDWARDS, A.M., M.D.,
Atlantic City, N. J.

(CONTINUED FROM FEBRUARY ISSUE.)



THREE conditions of the nervous system are essential for complete evacuation of the bowels:

First. Integrity of the sensory nerves, that they may receive and transmit the information that there is waste in the bowels seeking removal.

Second. Integrity of the nerve centre to which this information is conveyed, that it may understand the significance of the message received and originate appropriate orders.

Third. Integrity of the motor nerves, that they may convey to the proper muscles the command of the nerve centre to empty the bowels.

The muscles of the bowels must be in condition to respond to the commands received through the nerves.

The liver must make bile, and this bile must find sensitive and willing nerves upon which to make its proper impression.

To recapitulate: the mechanism of defecation requires (1) something to be voided; (2) muscles with which to void it; (3) nerves to vivify these muscles; (4) bile to help the waste to excite these nerves to action. The physiologist will go much more into detail, but, for practical purposes, the four requisites enumerated will, if present, insure daily, complete evacuations from the bowels.

Let us analyze them. There must be something to be voided. The vegetative phenomena of life, so to speak, the automatic, reflex, unconscious, and uncontrollable acts of living, all make waste, so that even in the bedridden invalid waste is always found, but activity of voluntary life greatly increases the bulk of this waste; hence an active life, by making more waste, produces a greater bulk to make a stronger demand upon the muscles and nerves of the bowels for its removal. Use means vigor; motion means use; hence an active life of motion means increased vigor of the bowels.

Muscles, we have said, are the agents of motion for the bowels; it is true of the muscular system throughout the whole body that motion or use makes strong, hence a healthy development of the muscular system, in which the bowel muscles participate, will be a necessity for the correction of constipation; but you must clearly understand what *healthy* muscular development means.

It is here only necessary to assert as a fact that, while muscles are the organs of motion, the power of motion does not reside therein; that is to say, that while it is the alternate contraction and relaxation of a muscle or muscles that produces motion of any part, these contractions and relaxations take place only under the direction of the nerves; hence it must be evident that regularity of the bowels requires not only a good muscular but a good nervous system as well.

Bile, you already know, is "nature's purgative," and it will be sufficient to say that if you do not keep your liver in good condition, so as to have it make a sufficient amount of bile, you will suffer from constipation, no matter what else you may do to correct this condition.

Now, I think you understand enough about what constipation is, and the necessity for regular evacuations to warrant us in dismissing this part of the subject and going on to tell you how to avoid the former and secure the latter.

Suppose you were to meet me on a country road driving an exhausted horse, and asking your advice how quickest to reach my destination, forty miles beyond, and suppose you were to tell me to whip and beat this poor horse ; your advice would be akin to that of the patent medicine proprietor, who, through the columns of the daily papers, is continually urging you to use his drugs to cure constipation ; but the good Samaritan who tells me to rest my tired horse, give him a good supper and breakfast, and start fresh in the morning, gives advice like unto that which I am giving you.

The whip will speed the tired horse and the drug will empty the torpid bowels, but in each instance the result is achieved only by an unnatural stimulation of the horse and the bowels that inevitably results in leaving him and them more exhausted and less equal to their labor than they were before. Each mile that I go the effect of the whip becomes less marked (in proportion to the growing fatigue of the horse), and its application must be more vigorous, until ultimately the horse becomes so accustomed to the stimulation of the whip that he moves not without it, and finally refuses to respond to the most vigorous thrashing. Each dose of purgative drugs that you take must necessarily be larger than the last, until the bowels become so accustomed to this artificial stimulant that they refuse to move without it, and ultimately fail to respond even to drugs, moving only when so full that they can hold no more. This is not only scientific truth ; it is common sense.

Now, let us get a clear understanding of what the word *drug* means ; all drugs are medicines, but all medicines are not necessarily drugs. To point this difference, let me quote from Professor Alfred Stillé's standard work on "Therapeutics and Materia Medica." In the very first line of his introductory chapter he says, "*Medicines* are substances used for the cure of diseases." Further on he says, "In some sense even all food is medicinal, for it counteracts hunger, the first symptom of a disease which tends directly to death." The word *drug* is less comprehensive in its meaning, and ought to be confined to those articles which the general public understand by the term medicine. Its use

should be restricted to those articles whose *sole* application in the human system is to cure disease, while many articles comprised under the head of *medicines* may be used, not only to cure disease, but also simply as food. I draw this distinction between medicines and drugs because I am now about to tell you that while much benefit will be derived by the constipated person from the use of certain medicines and remedial measures, about which I will inform you, nothing but injury and a further confirmation of the constipation can result from the indiscriminate use of drugs, a habit which, I regret to say, is so common among our people that the manufacturers of the various patent cure-all, antibilious, and anticositive pills have been enabled to build up enormous fortunes, founded upon the gullibility (if I may be allowed the word) and ignorance of the laws of physiology of their victims.

I use the word *victims* advisedly. I pity from the bottom of my heart the poor, well-meaning person, who, as a result of ignorance of the functions of his own body, will pay his money for and consume large quantities of these drugs, whose chief merits lie in the cunning minds of their manufacturers and in the expensive, flaming, and cutely-worded advertisements of properties which they do not possess, and by which means many intelligent persons are duped into buying them, and do not discover their mistake until very serious and sometimes irreparable injury has been done.

I would have you clearly understand this patent medicine business ; in most instances the manufacturers of patented drugs use exactly the same drugs that are daily prescribed by regular physicians ; they select a formula, or combination, compound it in immense quantities, spend fortunes annually in advertising, claim for this combination curative properties that it does not possess, fool the people, and grow rich. The doctor studies each patient and varies his combinations to suit the needs of each case ; the "patent-medicine" man "shoots in the dark," sells the same thing to everybody ; if it happens to do good, so much the better ; if it does no harm, thank luck ; if it injures, the victim falls into the hands of some regular physician ; here is the story briefly told.

Many of these drugs will open the bowels, it is true ; I do not deny this, but you must not be satisfied with this superficial action ; look deeper and see what they also do.

They open the bowels because they consist of drugs that

possess the property of *stimulating* the liver, and the muscles and nerves of the bowels to increased action, and so they force the contents of this tube farther and farther along, until they finally reach the anus and are expelled.

Stimulation is an artificial process, when the result of artificial causes. In order that our functions may be properly carried on and that we may have healthy life, there must be nothing artificial about us. All of our actions, voluntary and involuntary, must conform to nature and be natural. You will know that over-stimulation is always followed by a corresponding depression. A certain quantity of alcohol taken into the system will stimulate every part of it; all of your organs will act more rapidly, you will live faster, as it were. When this stimulating action has passed away you suffer from depression, evidenced in many ways.

You are morose, melancholy, and low-spirited, evidencing mental depression; you experience chilly sensations, showing depression of the function that generates heat; you have no appetite, showing depression of the general system; your stomach cannot properly digest what you take into it, showing depression of the digestive function, and so on, indefinitely, all of your varied functions will clearly make evident to you the inevitable depression that always follows over-stimulation.

When the habitual drinker of liquor has taken a glass or two too much at night, he knows full well the general depression that he will experience in the morning, and, unfortunately, he finds it necessary to consume more liquor in order to again stimulate his varied functions up to that standard which, in the ordinary, healthy, temperate person would constitute only natural action.

Ultimately his system becomes so accustomed to this stimulating action of alcohol that his organs cannot properly act without it, and so, in order to live with any degree of comfort, he is obliged to daily saturate his tissues with this poison; or, if he has sufficient manly resolution to discard this baneful habit, he must suffer terrible depression and many physical ills before his system can be brought to that healthy and natural condition by which it may be enabled to act simply as a result of the natural causes furnished to it by the founder of nature.

So is it with the indiscriminate use of purgative medicine. There must be a cause for every effect, and if you furnish the

artificial cause (drugs) the bowels will soon learn to look for it and move not without it. The bowels become, ultimately, so accustomed to the *artificial stimulating* action of powerful drugs that they absolutely refuse to move without their aid ; they depend upon them for sufficient power to expel their contents ; and, as with alcohol, so with these drugs, long-continued use breeds such tolerance of their effects that each successive dose must needs be larger than the preceding one, until, finally, enormous doses are required to procure a single evacuation from the bowels, which should have occurred naturally and spontaneously if this pernicious habit had not been cultivated.

Throw aside prejudice and sentiment for a moment and consider this "*patent medicine*" question from a common-sense stand-point. Medicine is not a science ; it is but an art ; the physician is never *absolutely sure* when he gives a dose of medicine exactly what effect will follow ; he has good reason, as the result of the experience of himself and others, to expect certain drugs to produce certain effects, but he does not *know* that this will be the case with *scientific certainty* ; I make this confession because I am going to ask you whether it is not the sublimity of absurdity, in view of the acknowledged uncertainty of the action of drugs, for any man to make up gallons of any combination and offer it for sale with the guarantee or assurance that it will cure certain, or any, diseased conditions in thousands of persons whom he has never seen, knows nothing about, and in most cases (not being a physician) would be incapable of prescribing for if he did see them, and does it not seem pitiful that so many thousands of persons are wasting their money and injuring their health by being parties to this folly.

Will you not admit that it is foolish, to say the least, to use these drugs, about which you know absolutely nothing, without first obtaining the advice of a competent physician who is making the action of these drugs the study of his life.

If any lawyer reads this article, let me ask him if he would not consider a man very foolish, and very much to be criticised for want of good judgment, if, ignoring the services of the legal profession, he were to undertake the management of his own legal business. And so on I might draw the comparison in every profession. But when we come to the use of drugs the question assumes much more importance ; it then really becomes a *vital question*. When a man meets with financial misfortunes, his friends

consolingly say, "Oh! well, you have good health." Those of a religious turn of mind daily pray for a preservation of health; parents are anxiously solicitous about the health of their children; and yet, in spite of all this desire for health, these very persons will deliberately undertake to doctor themselves, and, as invariably happens, when a man undertakes anything about which he knows nothing, they make many errors, and instead of doing themselves good only make matters worse; and this in the face of the fact that their Creator has placed at their service the art of medicine and its practitioners, in order that all curable ills may be intelligently treated.

This is not a plea for physicians; far from it. Were I, selfishly, to consider the doctor to the exclusion of the welfare of his patient, I would advise you all to freely use these proprietary medicines and wonderful specifics for everything, because by so doing you would ultimately bring about such a state of ill health that you would of necessity fall into the hands of the physician, and then your system would be so deranged that it would cost you much more time and many more dollars to secure a restoration to health than if you had sought intelligent counsel and advice in the beginning of your trouble.

(TO BE CONTINUED.)

The Soil in Its Relation to Disease and Sanitation.¹

BY G. V. POORE, M.D., F.R.C.P. (LONDON),

Physician to University College Hospital; Professor of Clinical Medicine and Medical Jurisprudence, University College, London.

(CONCLUDED FROM PAGE 91.)



ANOTHER experience was a visit to a sewage farm belonging to a town in which brewing is the staple industry. This farm was large (nearly twice as big as at one time was considered necessary) and was composed of a very porous, gravelly soil in a high situation. The manager was an able man, and one felt that if success was to be obtained it was here. But the amount of water pumped onto this ground was exceptionally great, amounting at

¹ From the London Lancet.

times to as much as 150 gallons per head of population *per diem*. The result can be imagined. The humus was drowned, and large tracts of the farm were as wet as a marsh, bore no crops, and never could be made to bear any under such conditions. As soon as it had been saturated it was ploughed up and saturated again, there being no time (let alone other considerations) to grow crops in face of the huge volumes of water which had to be dealt with. Those parts of the farm which were under cultivation grew enormous quantities of water-grass, a noxious weed, and altogether the agricultural aspects of this estate were as gloomy as could well be. As for the effluent, it was thick and turbid, and stunk like a dirty brewery. It was impossible to believe that the effluent had been rendered safe for discharge into a river, and its cost must have approached that of the beer which was sold in the adjoining town. The amount of water seemed to be the trouble here, and clearly the first duty of the municipality would be to divert directly into the river all the storm water and all the water which was used in enormous quantities for refrigerating purposes, and which, being perfectly wholesome, might go into the stream direct. A visit to the pumping-station of this municipality was most unpleasant for the nostrils, and left upon me the impression that the Local Government Board would do well to insist that all sewage committees should have a board-room at the pumping-station and another at the farm, and should be allowed to deliberate in no other place. The humification of excrement in the presence of such an overpowering amount of water is impossible, and I believe that municipalities which are now busy diverting storm water will have to go further and deal with excreta, domestic slop water, and manufacturers' effluents on different and separate systems. I confess I should like to see water-closets dealt with on an independent system by a vacuum principle such as is advocated by Shone and Liernur. Manufacturers' refuse, which is liable to contain chemicals and antiseptics, is so likely to kill the humus by poison as well as by drowning that it seems impossible to deal with it on any one system, and it is to be hoped that with the advance of chemistry it may be increasingly possible to turn manufacturing effluents to profitable account.

It is now more than ten years ago since I first deliberately drew attention to the shortcomings of modern sanitary methods, and pointed out that the safe disposal of organic refuse was a question which mainly concerned the biologist. It is a hopeful

sign of the times that engineers are now recognizing this fact, thanks mainly to the teaching of the Board of Health of Massachusetts. The purification of sewage is wrought by the presence of living organisms on the filters; and for the due filtration of drinking-water it is now admitted that the filtering material must have a coating of living slime. These are facts which are now all but universally admitted.

It is admitted that humus is one of the best filtering materials for water, and that water from a river full of living organisms is to a large extent freed from them by filtering through a few feet of the humus on its banks. In the past few years Professor E. Frankland has shown that water of singular microbial purity has been obtained from the gravel beds which in places flank the Thames. Such water, one must suppose, is obtained from ground water which has fallen upon the earth, has filtered through it, and is slowly flowing towards the river. The purifying agent in these cases is mainly, one must suppose, the living humus which lies upon the surface, although the subsoil cannot be without some effect. These facts must alter our attitude towards surface wells, and must teach us what to a great extent has been admitted,—that the purity of surface wells must depend more upon the mode of construction and the surroundings of the well than upon its depth. Wells are polluted by foulness which has reached the subsoil without being subjected to the purifying influence of the humus, and there are many facts which go to show that if foul water gets to the under side of the humus without going through it its purification in the subsoil is far from certain. The Lausen epidemic, the Worthing epidemic, and the pollution of the deep well sunk in the sandstone at Liverpool seem to show us that percolation through a mile of underground strata entails no certain purification, and that wells 80 feet or 400 feet deep are not safe if fissures allow the contents of cesspools, leaking under pressure, to trickle into them. The almost universal condemnation of surface wells and their frequent pollution are mainly due to the fact that we take our filthy and dangerous liquids through the humus in pipes, and thus insure at great expense that it cannot be subjected to purification by it. If these underground pipes leak, the mischief caused by pollution of wells may be very far-reaching. It is very probable that foul water continuously thrown on the same spot of ground may in time work its way to a well and thus pollute it. Such ground which is constantly

soaked, be it remembered, is never tilled, because tillage is impossible. For ground to be tillable it is essential that reasonable breathing time should be allowed. I am not altogether sure (although I hardly dare utter such a heresy) that a properly-constructed surface well in a selected situation may not prove to be one of the safest sources for water, because it can be inspected with perfect ease, and the fact of accidental leakage into it would become apparent. In this connection it may be well to describe in full detail the well which I have sunk in my garden at Andover, a garden which is rather handsomely manured with human excreta. The well is placed in the very centre of the garden at the intersection of two paths,—a broad green path and a narrower asphalted path. This situation was chosen for two reasons: (1) that it was as far as possible removed from any accidental pollution from the sewer in the street; and (2) that in the centre of the garden it would theoretically run the greatest chance of faecal contamination from the manure used. As the well was sunk solely for experimental purposes, this was essential. The garden is on a river-bank and very slightly raised above the level of the water. The well is only some five feet deep, and the water stands at a level (which varies very slightly) of about three feet six inches from the bottom. The well is lined throughout from the very bottom to a point some fifteen inches above the ground with large concrete sewer-pipes two feet three inches in diameter, and these pipes have been carefully cemented at their junctions. Outside the pipes a circle of cement concrete about four inches thick has been run in. It will thus be evident, the sides being perfectly protected, that no water can possibly enter this well except through the bottom, all contamination by lateral soakage through the walls being rendered impossible. The well is surrounded by an asphalted path about three feet wide and slightly sloping away from it, and it is encircled by a clipped privet hedge about five feet high except at those points where the circle of privet is cut by the paths. There is a closely-fitting cover of oak, which has an outer casing of lead, and thus all contamination from above is prevented. The water is drawn off through a two-inch leaden pipe which passes through the outer concrete and the concrete lining pipe, the cut passage for the pipe being carefully closed with cement. The pump is behind the privet hedge, and is provided with a sink and waste pipe which take the overflow some twenty or thirty yards to a neighboring stream. In this way the

constant dripping of water in the neighborhood of the well is prevented, for I am very much alive to the dangers attending a constant water-drip, which might be able in time to worm its way through soil and concrete into the well itself. I regard this question of the overflow as one of great importance which is too often neglected. Figs. 1 and 2 show this well in section and plan. The nearest point to the well upon which any manurial deposit of excreta is likely to be made is on the far side of the privet hedge, and the distance of this point from the bottom of the well is seven feet. All water which finds its way into the well must have passed through at least six or seven feet of earth, and, of course, the great bulk of the water has passed through a far greater length. Three chemical analyses of this water, one

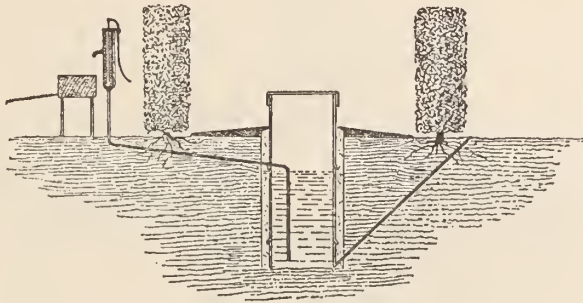


FIG. 1.—Section of well, showing concrete lining and position of pump. The diagonal line on the right of the figure is to mark the distance from the nearest garden bed to bottom of well.

by Professor Frankland and two by Dr. Kenwood, testify to its organic purity, and three bacteriological investigations have given similar indications of purity. A bacteriological examination of the water from the river Anton and the well water, made on April 11, 1895, gave 1133 growth per cubic centimetre for the river and only 7.5 for the well. Of course, there may be a dangerous microbe among this small number, but, on the whole, I think the best guarantee of the purity of the water is the condition of the well, which after four years is as clean on the bottom and sides as it was the day it was made. There has been no appreciable increase of sediment on the bottom, and the pebbles are as plainly visible as they ever were. The well is for experimental purposes mainly, but water for garden use is drawn from it, and

during the severe frost of last winter my gardener and some of his neighbors were entirely dependent upon it for household purposes. I seldom go into my garden without drinking some of the water, which is clear and delicious, and my numerous guests seldom escape without drinking some also. My belief is that, as I have said, the well is a very safe one. It must be mentioned, however, that after very excessive amounts of rain, such as occurred once during the past summer, when the water came down in a perfect deluge and lay for hours in big pools upon the ground, the water in the well becomes turbid. My belief is that under these circumstances the fine sediment on the bottom is driven upward

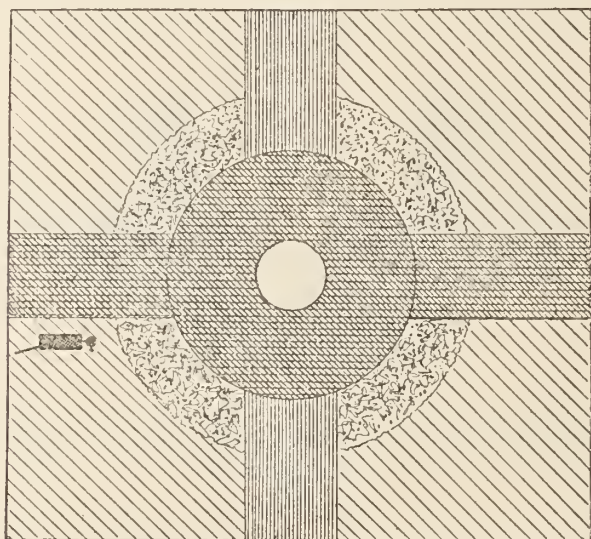


FIG. 2.—Plan of well, showing its relation to paths and hedge.

by the suddenly increased pressure of the water outside, and I have no reason to think that after these storms there has been any actual increase of sediment, the stones at the bottom remaining as visible as ever. I have never been able to make a bacteriological examination after one of these floods, but hope to be able to do so.

The question whether such a very shallow well becomes dangerous after a flood is a most important one. It is clearly understood that with my well there is no possibility of flood water entering at any point except through the bottom. It must be

recognized that in times of flood with a drowned humus the power of purification may be lessened. On the other hand, my experience leads me to say that it is very difficult (if it be possible at all) to wash fæces out of well-tilled humus by any rain which we get in this country. Last autumn (1894), in the south of England, we had very severe floods, and I was able to note that the humification of fæces in my garden was, as a consequence, very much delayed. Fæcal matter was visible on turning up the soil for nearly three months after it had been deposited, and the masses of fæcal matter were enclosed in crusts of humus which had been rendered airless and clay-like by the excessive amount of water. This naked-eye test seemed to show that the well had not been endangered, for there were the fæces, and most certainly they had not been washed downward. When the pores of the soil had been opened by frost the humification of the fæcal matter went forward as usual. This experience seems to enforce what I have said before,—that a drowned humus cannot deal with dung. That floods may be dangerous to surface wells we all know, but it will be recognized that the conditions and circumstances of my well at Andover are distinctly different from those of the wells mentioned in the following extract, which were filled with flood water by leakage through their tops and sides.

In the Twenty-third Annual Report of the Local Government Board (1893-1894) reference is made by Dr. Thorne Thorne to certain investigations on outbreaks of typhoid fever in certain river-side populations in Yorkshire and Lincolnshire. These investigations by Dr. Bruce Low seem to prove conclusively that the fæcally polluted water of the Rye and the Trent had infected with typhoid fever a certain proportion of the inhabitants who consumed the raw river-water. Dr. Thorne Thorne goes on to say, "Incidentally it transpired during the course of this inquiry that the town of Malton had an altogether exceptional history in so far as enteric fever and diarrhœa in fatal form are concerned. Situated on the Derwent, four miles below the confluence of the Rye with that river, Malton was found to derive its water-supply from the Lady Well, sunk to a depth of fourteen feet in the middle oolite rock and occupying some low-lying land close to the river bank. Into this well river-water gained access as soon as the Derwent rose above a given point, the amount of river-water reaching the well varying from mere leakage through holes and crevices in the banks to complete submersion of the Lady Well

by the swollen stream. Gradually it had come to be noted that the outbreaks of fever and of diarrhœa followed on seasons of flood in the Derwent, a river which was referred to locally in 1890 as containing 'the sewage of all the towns and villages situated near the Rye and its numerous tributaries.''' In country places where surface wells are the only available source of water I strongly recommend that they be made on the pattern which I have been describing.

It may be well that I should describe precisely my method of dealing with excreta in my garden at Andover. My twenty cottages are provided with pails, except one which is provided with a "dry catch," and in time I hope to substitute the dry catch for the pails. It is a much better arrangement, and it is only for financial reasons that I do not effect the change forthwith. The contents of the pails and dry catch are removed every day except Sunday, and as the distance to be travelled is very slight the time occupied is not more than an hour. This daily removal is very easy and, I believe, economical; on sanitary grounds it is most advisable. The pails are provided with covers, and they are moved two at a time by one man who is provided with a milkman's yoke. The removal is thus done in ten double journeys, which vary in length from about 5 yards to 200 yards; perhaps an average of 100 yards, or a little more than a mile in all. With "dry catches," a properly-shaped shovel, and an iron vessel on wheels for transport, the removal of the excreta from the twenty cottages to the garden could be effected in a much shorter time. In disposing of the excreta I follow nature. Under natural conditions the increase of the humus is effected solely by organic matter deposited on the surface. I therefore have the excreta merely covered by mould for decency's sake. The scavenger digs a furrow, as is done by a gardner when cultivating his land, the excreta are placed in the furrow and then covered up, and thus at one operation the land is tilled and the excreta disposed of. All foul smell is at an end the instant the excreta are covered, and in this garden, which is a pleasaunce of considerable beauty, there is never anything to offend the eye or the nose after about 7.30 in the morning. I believe that, in the absence of any evidence to the contrary, when the excreta are thus covered with earth there is an end to any danger to health. In times of exceptional frost the excreta are mixed with ashes and stored until they can be inhumed. The great impor-

tance of this superficial burial must be insisted upon. It is the top of the soil which is most full of life. As regards microbial richness the first few inches are worth all the rest. It is the top of the soil which can destroy and assimilate organic matter; the subsoil has no such power. It is a common mistake to bury deeply any organic matter which seems to us to be particularly offensive. In this way we insure its preservation and endanger the wells. The safety of our wells is directly proportionate to the thickness of the humus, and to place organic matter below the humus is like throwing the dog's bone beneath the kennel instead of into it. The inefficiency of deep burial hardly requires to be mentioned. Bodies buried deep in the subsoil last for years, while those which are placed in the living humus are rapidly destroyed.

I should like to mention that when my well was dug there was found beneath a turf path and about three feet below the surface a large quantity of dead leaves, which had probably been deposited in a pit at some long antecedent date. They had undergone scarcely any decomposition, although they had been in that position very many years. Again, when engaged in pulling down a cottage my man unearthed an old privy some four feet below the surface. In this privy unmistakable fæcal matter was recognizable. Neither he nor I nor any of the neighbors had any knowledge of any such privy having been in use of late years, and my belief is that these recognizable excreta had been deposited at least half a century ago. Who shall say that these excreta did not still contain spores of all the ills that flesh is heir to? Under natural conditions all dead organic matter falls upon the surface of the ground, and nature is a very sure guide.

After the excreta have been superficially buried, plants of the cabbage tribe are dibbled in as soon as may be. This is often done within three days, and the cabbages are sure to flourish. Seeds do not flourish with any certainty, and although I have seen fair crops of turnips, peas, onions, etc., when the weather has been favorable, such crops are liable to fail, while cabbage as a first crop is practically sure to succeed. I could have shown you a month or so ago a spot in the Andover garden which had been sown with turnips and radishes as a first crop after manuring. The produce was Brobdignagian, but worthless except to dig into the ground. The development of green head was very great, the roots were huge and woolly. When the plan of operations which

has been described (daily superficial burial followed by cabbage planting) was commenced some ten years ago many were the prophecies of failure. The practical men shook their heads and said I never should succeed that way, but that I was "bound to store the stuff in a heap to allow it to ripen before being put on the land." As a sanitarian one was naturally anxious to get the excreta below the surface of the ground as soon as possible, and I now feel confident in stating that the plan I recommend is the best from the sanitary, agricultural, and financial points of view. Sanitarily it is the best because there is no delay in the safe bestowal of the excreta; agriculturally it is best because no

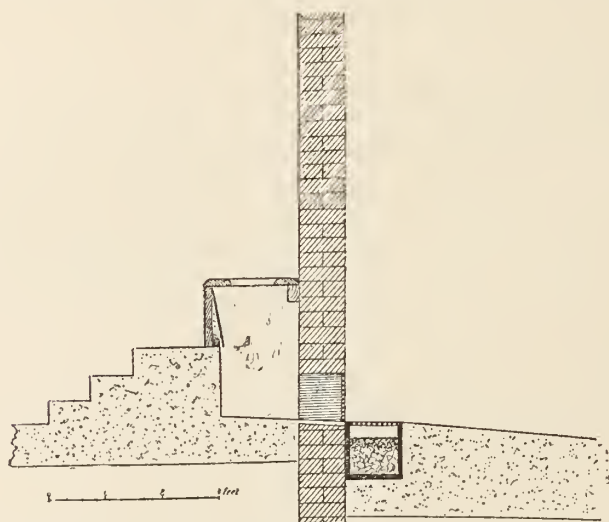


FIG. 3.—Section of "dry catch" privy, with gutter filled with sawdust to absorb excess of urine.

ammonia or other volatile body is given to the air, but all goes to enrich the land; and financially it is best because it involves moving the dung once only instead of twice, the same operation that tills the land serves to cover the dung, and while the excreta are "ripening" for other crops the farmer gets a crop of cabbage. After the cabbage crop the ground is still very rich and will grow everything or anything to which the soil and situation are suited in high perfection.

The best receptacle for excreta—far better than any form of pail—is one which imitates natural conditions and insures that

the excreta are kept above the level of the ground and are exposed to the air. Such a receptacle is the "dry catch" of which I have spoken. The privy seat is raised on a few steps and the receptacle below is concreted, the floor being made to slope gently towards the door, which should be made of fine wire netting in order to insure thorough aëration. The urine in part (and my

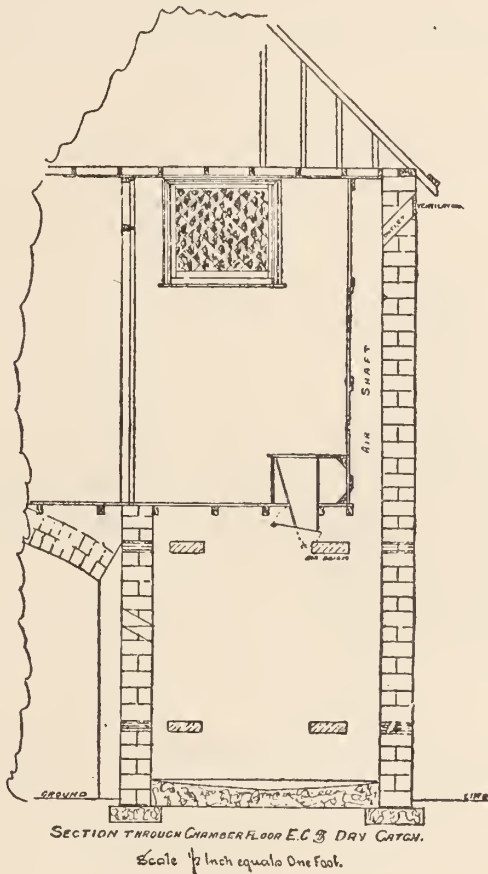


FIG. 4.

experience leads me to say in very small part, because it is voided in front of the fæces, which check its downward progress) flows towards the door, and may be absorbed either by a heap of earth or by sawdust or other available absorbent contained in a specially constructed depression or gutter. This arrangement is shown in Fig. 3. In such a receptacle as this the humification of the fæces

will go forward even though no earth be added. I had practical proof of this last summer, because the "dry catch" which I have erected was, by a mistake of the scavenger, not emptied for nearly two months, and we found that the bottom of the mass had humified and become inoffensive. No earth had been added in this case. The other figures (Figs. 4 and 5) show a specially contrived plan, the object of which is to make "dry catch" earth closets acceptable to ladies. This closet is approached from the bedroom floor of the house through a lobby having cross ventila-

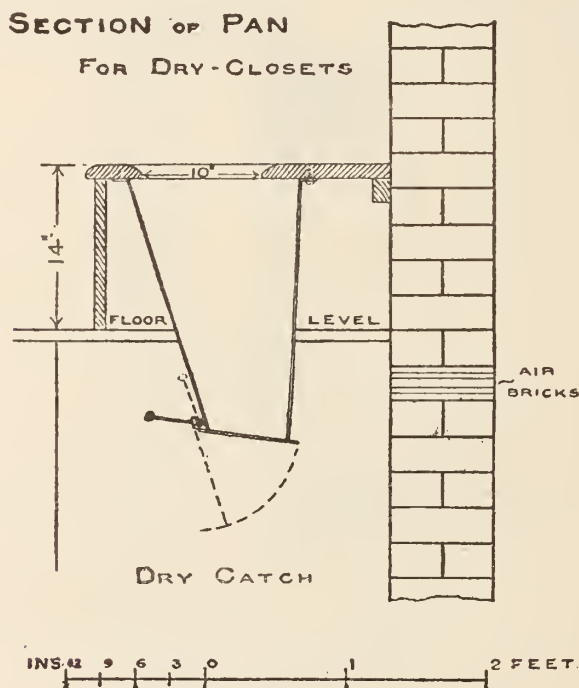


FIG. 5.

tion; the "dry catch" is on the ground floor and is provided with a door through which the soil can be removed without traffic through the house. (See Fig. 4.) The earth for this closet is also supplied from the outside through a specially contrived hopper, so that the man who brings the earth cannot see, or be seen by, any chance occupant of the closet. The pan is of a shape which has carefully been considered, is screwed to the under side of the

seat, and is fitted at the lower end with a flap having a somewhat heavy counterpoise. By this arrangement the excreta drop out of sight and all up-draught is prevented. The flap works in a slot and can be removed with perfect ease for purposes of occasional cleansing. (See Fig. 5.) This pan, which has worked exceedingly well for two years, was made for me by Messrs. Righton, of 376 Euston road.

To show how little annoyance may be caused under certain circumstances by excremental matters, it is only necessary to appeal to the streets of London or any other large city. The amount of horse excrement and urine which are voided in the streets is prodigious, and at cab-stands the same thing goes on day after day precisely in the same spot for years together, so that the earth near there must be sodden through and through with urine; and yet how little offence there is,—a certain pungency from ammonia, but no sickening, foul smell. A cab-stand is usually in very strong contrast, to the urinals provided for human beings, where, in spite of a lavish supply of water, the odor is sickening and most offensive unless an attendant be provided to keep the place absolutely clean after the manner of a housemaid. Then again, what is street mud? It is a collection of everything which is dropped in the street, excremental and otherwise, ground more or less by the traffic and mixed into a paste with rain-water and detritus from the roads and vehicles. It is ugly, sticky, dirty, and gives endless trouble to those who like to have their clothes and carriages look clean and smart; but—and this is the point to which I would call attention—it is never foul or offensive. It is scraped into heaps and is often left for hours, and practically never causes any foul smell. The odorless mud-heap is usually in very strong contrast to the sickening smell of the sewer grating along-side of it.

Simple water is by no means a perfect cleanser, especially for sticky material-like *fæces*, which we all know requires for its removal soap in addition to hot water and a nail-brush. In a butcher's shop putrefaction is kept in check by dryness and fresh air, and the use of sawdust to absorb blood. The results could not be better, and my experience has been that in cow-houses, stables, piggeries, etc., the less they are swilled with water the sweeter they are, provided there be ample ventilation and enough absorbent material to enable the dung and urine to be swept up and carted away.

Our go ahead municipalities, formed on democratic lines, are more ostentatious than the worst of Roman emperors. The London County Council wished at one time to give £750,000 for a *site* for its house! The central ideas of modern municipalism are the raising of loans and the sweating of the rate-payer. It must be remembered that there is no relation between magnificence and real efficiency. For example, in a town which I sometimes visit I am always interested by a stately pageant consisting of a huge conveyance weighing at least half a ton and looking like a cross between a railway truck and a hearse. This is drawn by a horse weighing 15 or 16 cwt., and this horse is guarded by two men weighing, perhaps, 12 stone apiece. Inside the hearse are eighteen huge pails weighing 40 lbs. each, and inside the pails are the weekly excreta of ninety people, which should, if properly managed, certainly not weigh more than 200 lbs. or 300 lbs. In short, there are about 30 cwt. of gear for the removal of at most 3 cwt. of material. This cumbrous array works, it need hardly be said, at a funeral pace, and there can be no doubt that a lad with a hand-truck coming every day would do the work far more rapidly, efficiently, and cheaply.

It must be borne in mind that the fertility of the soil should bear a certain proportion to the density of population, and that the ability of land to support its population ought steadily to increase, especially if the population enjoys the blessings of free trade. I may perhaps best illustrate my meaning by referring again to the visit which I paid this summer to the farm of Mr. H. C. Stephens, M.P. The down lands which comprise this district consist of a very few inches of humus overlying chalk, the herbage is scanty, and the population of animals (in relation to acreage) necessarily very small. One of the difficulties which the farmer has had to encounter in this district is the obtaining of sufficient water for his stock, and perhaps the most important work which Mr. Stephens has done is to sink a deep well in the chalk. This well, worked by a wind engine and provided with storage reservoirs, gives a supply of water which may be regarded as illimitable. With good water-supply, ample area, and the possibility of importing food which the neighboring railway affords, it became possible to maintain a very large number of sheep, oxen, and horses for farm and breeding purposes. The animals are all folded, and the whole of their dung is returned to the soil, and the effect produced by this large addition of organic

matter cannot fail to strike the visitor, who finds in spots where the herbage was previously so thin as to approach barrenness that he now has to wade knee-deep through a thick felt of grass. All over the farm the effect of adding this organic matter to the soil is everywhere apparent, and it is certain that the need of imported food-stuffs for the animals must diminish in proportion to the increase of fertility of the farm. This estate on Salisbury Plain realizes, in fact, the utopia of which I have spoken in "Rural Hygiene,"¹—*i.e.*, a place where there are water-pipes, but no sewer-pipes. The indispensable water has by skilful but comparatively simple engineering been brought within easy reach of the human and animal population, but the organic excrements and other refuse, instead of being washed away into a neighboring valley to poison the inhabitants there, are retained upon the soil to provide extra herbage, extra meat, extra work, and extra wages, with increased contentment and no loss of health. The increased fertility of the soil must have the effect of counteracting poverty and diminishing that charge upon the land known as the poor-rate, and, as for sanitary rates, the very essence of the progress I have been describing consists in the fact that there are none to pay. When the members of the local council in this utopia have mended the roads and paid for the school, they may return with a clear conscience to their own business instead of meddling with that of other people.

The fact that the potential increase of the fertility of the soil is to a certain extent proportioned to the increase of population is a political and economical fact of fundamental importance. The fertility of the soil of a country which imports millions of tons of food ought steadily to increase, and I believe that but for counteracting circumstances free trade ought to have benefited the farmer equally with all other classes of the community. If the enormous quantity of excremental and refuse matters due to free trade had been placed upon the land to increase the national stock of humus the fertility of the soil must have increased proportionately, and the fall in prices due to the competition of imported food would have been proportionately counteracted. If on the farm at Cholderton, which I have been describing, the well-water had been used for washing all the excrement of the animals into the nearest river, there could have been no increase of fertility of the soil, and the animals must have been dependent

¹ Essays on Rural Hygiene, second edition. Longmans, 1894.

upon imported cake and other food-stuffs in a degree which would never vary, instead of, as at present, tending steadily to get less. Among the nostrums which have been suggested for the relief of agricultural distress are "light railways," but as imports and exports are apt to balance themselves, one would fear that the light railway, for every truss of hay or sack of corn which it conveys to the nearest junction, will bring back a frozen carcass of meat or its equivalent. If, however, these light railways (and the existing railways) can bring the refuse of the towns on the land to increase the agricultural capital in the form of humus, the farmers will certainly have more to sell, and our need of imported food (per head of population) will tend steadily to get less. Until—if I may use the expression—we make some serious effort to leave our imported "cake" upon the land in a form in which it can be advantageously utilized, our needs for importation will never get less, and our state of scare as to the sufficiency of our navy will get steadily worse as the population increases. It is very bad policy for railways to charge exorbitant rates for the conveyance of dung, because the less dung they import the less will be the export of produce on the return journey. It is impossible to doubt that the man who increases the fertility of the soil of a country deserves well of that country and should be encouraged by the State and his fellow-countrymen. Professor Otis Mason, of Washington, has gone so far as to say, "The form of law which does not *decrease* the amount of taxation proportionately to the yield per acre is not in the line of progress." And again, "Any law which punishes a man with taxation for preventing waste, recuperating worn acres, or developing the latent resources of nature is wicked." There can be no doubt that taxation presses very hardly upon agriculturists, especially those whose land happens to be within the boundary of a "progressive" corporation. A friend who farms 200 acres of land (of which fifteen are grass) in the Thames Valley has been good enough to show me his receipts for taxes for the year 1892, from which it appears that he and his landlord pay between them more than £300 a year in imperial and local taxes. This is due to the fact that he is under the heel of a "progressive" board, which, finding it can borrow money at 3 per cent., is making full use of its powers and is fast converting a pretty village into something scarcely distinguishable from Houndsditch.

We may now profitably turn to the consideration of malaria,

a disease which is undoubtedly connected with the soil and which has its habitat in the soil of certain places. Malaria requires for its development decaying organic matter, a high or moderately high temperature, and usually an excess of moisture. Tropical marshes are the elected seats of malaria, but not the exclusive seats, for it is known that certain rocks and arid plains, as well as the sandy estuaries of rivers, are liable to be malarious. The one thing which all, or almost all, malarious districts have in common is the fact that they are barren, or nearly so, uncultivated, and in many cases uncultivable. Malaria is rare in England, but once it was common, and we must not forget that James I. and Cromwell are both of them said to have been victims of this disease, which was rife in London in their time, especially in the Essex marshes and on the south side of the Thames, in Lambeth Marsh and the adjoining districts. An undrained country is uncultivable, and it has been found that drainage followed by cultivation has in this country enormously lessened the amount of malarious disease. Cultivation of land finishes the work begun by artificial drainage. The soil is dried and aërated by tillage, and the organic matter, when the humus is no longer drowned, is oxidized and goes to nourish plants and trees which effect an upward drainage no less important than the downward drainage, while the oxygen exhaled by the green leaves cannot but benefit the air of the locality. If we wish to keep clear of malaria in this country we must till the soil and so nourish the humus that its produce may be sufficiently valuable to bear the expense of any artificial drainage which it may be necessary to maintain. If the land of this country goes out of cultivation, as in places it seems to be doing, I see no reason why we or our successors should not witness a recrudescence of malarious disease in localities which are prone to develop it.

It will not be unprofitable in this connection to consider the history of the Roman campagna. It is generally admitted that the Roman campagna was not always the desolate waste which it ultimately became. It was prone to malaria, doubtless, but this was kept in check by the large farming population. It is not conceivable that in days when locomotion was slow a city could have attained the proportions and importance of Rome if it had been situated in the middle of a sterile and malarious plain. The neglect of agriculture began in the Augustan age, when Rome was at the zenith of its power; and it is worthy of note that

Mæcenus is credited with having incited Virgil to write the "Georgics" in order to direct, by this fascinating method, the attention of the Roman people to the neglected joys of agriculture. With the acquisition of fertile districts in Africa and elsewhere, not only did the need for home-grown commodities decrease, but it is probable that the profits of home farming decreased also. Corn was imported in enormous quantities, while the expenses connected with the defence of the empire led to such a merciless taxation of the landholder that in self-defence he was obliged to allow his land to go out of cultivation, and thus escape from the brutal exactions of the tax-gatherer. According to Gibbon, within sixty years of the death of Constantine, 320,000 acres of the district of Campania had become barren. Further, there can be no doubt that the cloaca maxima and other cloacæ sent to the Tiber much, if not all, of the organic refuse which should have been returned to the land. Finally, there can be little doubt that the extravagant water-supply of ancient Rome must have had the effect of causing neglect of local wells, and as the water of the aqueducts was supplied to places in the campagna as well as to Rome itself, the discontinuance of pumping must have helped to leave moisture in the soil at the same time that an extra supply from a distance was giving an additional quantity to it. As these great works of engineering did away with the necessity of manual labor, and as the barren land stood in no need of husbandmen, it is not to be wondered at that the problem of the unemployed grew urgent in Rome. We hear that in the later days of the empire the masses congregated at the baths or waited whole days at the doors of the amphitheatre while they were fed with doles of bread or corn supplied from the public granaries. With a dense idle population and with barren and unwholesome surroundings the amenities of Rome as an imperial residence declined, and one is not surprised to find that Diocletian seldom visited it, and one cannot but think that the social and sanitary conditions of the capital were among the causes which led Constantine to abandon it in favor of his new city on the Bosphorus. Finally, one is not surprised to hear that when Alaric took the city in the beginning of the fifth century he did so, not by direct assault, but by seizing the huge granaries and magazines at the port of Ostia, and then offering to the unhappy Romans the choice of surrender or starvation. We are often asked to admire the Roman aqueducts, and Rome is not infrequently held up to us as a model to be

copied. I fear we are copying her only too exactly, and I fear that equally with Rome we shall find out the futility of a brutal and reckless expenditure mainly directed towards the starvation of the soil and a senseless struggle with conditions imposed on us by nature. I have heard it suggested that the cultivation of the soil of England is of no importance, that our islands are destined for residential and manufacturing purposes only, and that our sustenance is to depend entirely upon "big-bellied argosies" bearing all the treasures of more fertile climes. But the cultivation of the soil and the nurturing of the humus have important bearings upon questions other than food-supply; and if we continue to starve the humus and to convey our filth beneath it instead of upon it, I fear that the cost of living in this country is likely to increase, while the pleasures of existence will diminish.

The moral of all that I have been saying is to the effect that to nourish the humus and to till it are the inexorable duty of the sanitarian. This simple duty is the key to plentiful food and a good supply of wholesome water. Nature is relentless and will sooner or later destroy those who neglect to follow her inexorable laws. We used to say that "the weakest" (morally, physically, and mentally) "must go to the wall." Now we use the expression "survival of the fittest" to express the same idea. Nature does not relent, but man, in his commendable efforts towards philanthropy, endeavors to relent, and hence the principle underlying much modern sanitary work is the attempt to bring about the survival of the unfittest. If I may judge from the criticisms to which at one time and another the ideas which I have put forward have been subjected, I may conclude that the principles advocated are considered right, but that the lowest classes of our population are not to be trusted to safeguard to any extent the wholesomeness of their homes. Therefore, we are all asked to come down to the level of the dirtiest and most careless, and our sanitary methods (in which there is too much of Hercules and too little of Minerva) do not admit of any encouragement being given to those living within a municipal boundary who may be so circumstanced that they can adopt the principles I have advocated. No! we must all be tarred with the same brush, and no quarter is given to those who refuse to allow the municipality to be put to the trouble and expense of robbing them of stuff which they find invaluable on their own land. In Hampshire I

have spent a considerable sum of money in freeing the river from some pollution and saving trouble to the town. Incidentally, I have improved the value of a house, and, of course, the rates of that house have been raised. Such a fact is a most effectual check upon the vast majority of those who might wish to imitate what they may approve of in principle, and I feel assured that no real advance in sanitation will be made until there is an equitable adjustment of sanitary rates and we have the right, if we desire it, to pay for water by meter. That water should be paid for according to ratable value and that the rating authority and the water authority should be identical seems to me to be an arrangement which the rate-payer will possibly find irksome. The greatest of sanitary troubles in the present day is overcrowding, and this trouble is greatly fostered by our methods of sanitation. And yet we find responsible persons suggesting that open spaces should be taxed at "site value," while at the same time they are willing to spend any amount of millions in bringing water from Wales because they think that eventually their dangerously dense population will have a density twice as great. We shall some day recognize the futility of fighting against nature. It is the engineer's business to overcome natural obstacles, and we of the medical profession cannot have but the greatest admiration for the many distinguished members of that sister profession which, by its skill and daring, has in countless ways assisted the development of our commerce and manufactures. They have indeed "expelled nature with a pitchfork," but it behooves us to remember the rest of the quotation. We must distinguish also between brilliancy of achievement and the end attained. We all of us admire the brilliant men who made the Thames Tunnel, built the "Great Eastern" steamship, and gave us the luxury of the broad-gauge railway; but it is doubtful if the original shareholders in those enterprises would participate in our enthusiasm. Money will accomplish nearly anything in the engineering way, and it is not the engineer's business to consider the financial side of the question. I have always had a shrewd suspicion that Archimedes was possibly less admired by the Syracusan rate-payer than by the rest of the world, and I have often pondered whether, had he lived in these days and had made his famous request of *δὸς μου στῶ*, the local government board would have sanctioned the issuing of a Syracusan 3 per cent. stock to provide the fulcrum for which he asked.

I frequently meet friends who say, "I've been reading that article of yours about the earth," and so forth, and then, after patting one on the back, and being charmingly complimentary, they generally end by saying, "But, after all, you know, give me a good old water-closet with a jolly good flush." The fascinations of this winsome apparatus seem unconquerable, and one is bound to confess that—provided the apparatus be of a good pattern and well made; provided the plumber who sets it has knowledge and a conscience; provided those who use it do not try its constitution with brickbats and old boots; provided there is not a frost; and provided there is not a drought—it does sweep out of the cockney's house material for which he has neither use nor market. All the difficulties and dangers of the water-closet are on the far side of the trap, and do not trouble the householder. As a champion of individual liberty, I would say that those who in country places wish for water-closets should pay for them, and those who, for conscience' sake, do not pollute the rivers or starve the soil should not be taxed to pay for the misdeeds of those who do.

Wholesomeness of Glucose.

The National Academy of Sciences, at the request of the Commissioner of Internal Revenue, made a report recently on "the composition, nature, and properties of glucose," from which we extract the following interesting data. The committee reported the following conclusions:

(1) That the manufacture of sugar from starch is a long-established industry, scientifically valuable and commercially important.

(2) That the processes which it employs at the present time are objectionable in their character, and leave the products uncontaminated.

(3) That the starch-sugar thus made and sent into commerce is of exceptional purity and uniformity of composition and contains no injurious substances.

(4) Though having at best only about three-fifths the sweetening power of cane-sugar, yet starch is in no way inferior to cane-sugar in healthfulness, there being no evidence before the committee that maize-starch sugar, either in its normal condition or fermented, has any deleterious effect upon the system, even when taken in large quantities.—*Confectioners' Journal*.

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EDITORIAL

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COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

The Observance of Sanitary Law.

IF one infringes upon a law of the land and is found out, he is arrested and tried. If upon his trial he claims that he was ignorant of the existence of the law which he is charged with having violated, he is told that "ignorance of the law" cannot be accepted as an excuse; that it is the duty of every citizen to familiarize himself with the laws of his country; yet no special provision has been made for such instruction; the punishment is the incentive for seeking information.

This holds good with human laws, should it not hold good with the laws of nature. The prison and the scaffold are the penalties for the infringement of human law; disease and premature death are the penalties for the infringement of natural law.

All the phenomena of nature are subject to natural laws; there is a "natural code," the infringement of which automatically brings disease. If we insist upon a knowledge of human law, so that a man may be safe from the robber, the murderer, and the slanderer, should we not also insist upon a knowledge of natural law, so that one may be protected from disease and death. Is it proper that we should be satisfied with education and coaxing, leaving it to the free will of the individual whether or not he shall obey the laws of nature, which are in reality the laws of hygiene? Should we not have a comprehensive hygienic code,

ignorance of which should not excuse one for its infringement? should we not compel (by punishment) our people to inform themselves about natural as well as human laws?

In the matter of health, individual precaution is of but limited avail; one may observe strictly the laws of nature yet fall a victim to the negligence of his neighbor; should this neighbor not be punished for his ignorant or wilful violation of the laws of nature?

Will not the fear of punishment prove a greater incentive to the acquisition of hygienic knowledge than any amount of coaxing or moral suasion?

We have some few hygienic laws carrying penalties with them, but should we not have a comprehensive code?

Should we not legislate punishment, the fear of which will compel the masses to acquaint themselves with hygienic laws and observe them? To our way of thinking this question can be answered only in the affirmative, but then we plead guilty to enthusiasm; hence, that we might have an unprejudiced expression of opinion, we addressed a letter, embodying these queries, to the Speaker of the House of Representatives at Washington, and to the governors (as executive officers) of each of our States.

As evidencing the woful lack of interest in this vital subject that characterizes humanity, but few of these distinguished gentlemen have even vouchsafed a reply to our letter; those who did, write as follows:

STATE OF IDAHO, BOISE CITY, EXECUTIVE OFFICE.

JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

Sir: Replying to your favor of January 6, I believe that a knowledge of the laws of hygiene should be taught in our public schools. In some States scarcely any attention is paid to the instruction of the pupils on that subject. It is a remarkable thing that, in this enlightened age, the human family knows so little about the laws which govern their health. I believe that the efforts of State government should be directed in that direction, rather than in compelling people to do something which they really know nothing about.

Respectfully yours,

January 21, 1896.

W. J. MCCONNELL, *Governor of Idaho.*

Reasoning from this stand-point, must we not, logically, argue that, since we do not teach human laws in the public schools, we ought not to inflict punishment for their infringement? It is easy

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enough for the people to acquaint themselves with the laws of hygiene if they honestly desire to do so, and would not the fear of punishment be the most effectual way of stimulating this "*honest desire*"?

STATE OF WASHINGTON, EXECUTIVE DEPARTMENT, OLYMPIA.
JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

Dear Sir: Your letter of the 6th instant, requesting the governor to favor you with a brief expression of his views on the question of statutes designed to preserve the health of the people, has been received during his absence. Upon his return your letter will receive his attention.

Very respectfully,

January 15, 1896.

E. C. MACDONNEL, *Private Secretary*.

We hope to be able to publish the governor's views in our next issue.

STATE OF NORTH CAROLINA, EXECUTIVE DEPARTMENT, RALEIGH.
JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

Dear Sir: Replying to your favor of the 6th instant, I am instructed by the governor to enclose a letter from the secretary of the State Board of Health in regard to the subject mentioned therein which the governor endorses as expressing his views on the subject, "*compulsory hygiene*."

Very respectfully yours,

January 24, 1896.

S. F. TELFAIR, *Private Secretary*.

NORTH CAROLINA STATE BOARD OF HEALTH, RALEIGH.
HIS EXCELLENCY, GOVERNOR CARR.

My Dear Sir: In reply to your communication enclosing a circular letter from Dr. J. F. Edwards, Editor of THE ANNALS OF HYGIENE, and requesting an expression of my views upon the question, "Should we have a comprehensive State or national code of sanitary laws, designed to preserve the health of the people, the observance of which should be made compulsory and their infringement made punishable, or should we be satisfied with efforts to educate the people up to the importance of a voluntary observance of sanitary laws? Should we compel or coax obedience to the laws of health?" propounded therein, I beg to say,—

The State can have no higher duty than the protection of the life and health of its citizens, and it should, therefore, exert all its powers to promote that end, so that, in my opinion, it should employ both compulsion and education,—the latter always and everywhere, and the former whenever practicable. In a city with a well-organized and equipped health bureau, with a strong police force to back it up, sanitary laws might be fairly enforced in the face of an adverse public opinion,—until the next election; but in a sparsely-settled rural community, like our State for the most part, any law unsupported by public opinion would be a dead letter. At the same time the very existence of such laws upon the statute books would have an educational influence, and attempts to enforce them would stir up the

people, excite interest in and discussion of the subject, and open their minds to the importance of and need for such laws. The few that we now have relating to contagious diseases, the contamination of water-supplies, etc., have undoubtedly advanced the cause of the public health, although I have never known of a single person being punished for the violation of one of them. This is especially true of our cities and towns.

Our own State Board of Health, having only advisory powers, has devoted itself to the education of the people by the distribution of literature of a practical character, and by holding "health conferences with the people," and I am gratified at the assurance from various quarters that we have made a distinct and favorable impression upon the public mind.

I am opposed, personally and officially, to the interference of the general government in our local affairs, sanitary or otherwise, except upon request in times of emergency beyond our power to meet.

With great respect, I am,

Very truly yours,

January 14, 1896.

RICHARD H. LEWIS, *Secretary*.

This letter has the right ring about it ; legislation would provoke agitation ; agitation would stimulate sanitary education, and such education would, ultimately, heartily endorse and support such legislation.

THE STATE OF NEW HAMPSHIRE, EXECUTIVE DEPARTMENT,
CONCORD.

JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

Dear Sir: In reply to your letter of the 6th instant : From my present stand-point I should not approve of national legislation with penalties on the subject of public health. In theory, such legislation may meet the approval of many, but the application of such laws would not be in harmony with the prevailing idea of national government or the well-established customs of our country. I am in favor of State legislation that creates health officers and that gives them authority to deal efficiently with specified conditions, yet I am not prepared at present to advocate a radical penal code.

We are living in an era of law making. Reforms too often are pleading for penal codes rather than appealing to the good sense of the people, and, possibly, in an issue of criminal restraining laws against personal liberty, we are nearing the line of danger. We cannot proceed beyond the approval of public sentiment, and in many directions instruction is more efficient than law.

I am in favor of instruction at the expense of the State and of a comprehensive effort to educate the people. As soon as the people comprehend that the natural penalty of a violation of the laws of health is more certain and more severe than any punishment inflicted by statute, there will be less need of legislation or a willing consent to reasonable restraining enactments.

Very respectfully,

January 11, 1896.

CHARLES A. BUSIEL, *Governor*.

Theoretically, the governor is right ; but our experience (extending now over twenty years) impels us to believe that without some compelling influence the masses of the people will not receive sanitary instruction, and will not heed its teachings if they do receive it. Interference with personal liberty is a serious question, we admit ; but do not our human laws restrict personal liberty in the interest of the community ? and is there not more justice in restraining the liberty of the individual if he is utilizing his liberty to bring disease and death to his neighbor ?

STATE OF MICHIGAN, EXECUTIVE OFFICE, LANSING.

JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

Dear Sir: Your circular letter of January 6, asking in effect whether I think that sanitation should be accomplished by education alone or whether there should be legislation to aid it, duly received.

I say unhesitatingly that it needs both. While education is necessary to secure legislation, one person's neglect of sanitary laws so affects other people that there is no doubt in my mind of the necessity of legislation in regard to sanitation ; in fact, in this State progress is being made along that line at every session of the legislature.

Yours truly,

January 15, 1896.

JOHN T. REIL.

STATE OF OHIO, EXECUTIVE DEPARTMENT,
Office of the Governor, Columbus.

JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

My Dear Sir: Governor Bushnell desires me to acknowledge the receipt of your letter of January 6, and to say that in the future, when the press of business incident to the opening of his administration is over, he will endeavor to comply with your wishes.

Very respectfully,

January 16, 1896.

J. L. RODOUS, *Private Secretary*.

We will hope to publish Governor Bushnell's views in our next issue.

STATE OF CONNECTICUT, EXECUTIVE DEPARTMENT, HARTFORD.

JOSEPH F. EDWARDS, M.D., Editor of THE ANNALS OF HYGIENE.

Dear Sir: In reply to your inquiry of the 6th inst., the governor directs me to say that, in his opinion, some legislation on the subject is of value. In this State we have a more or less comprehensive set of statutes in the interests of the public health, and though some of them are objected to in some quarters, he thinks their operation is, in general, of value, and, so far as he knows, meets with the favor of the majority of our thinking people.

With regard to national legislation on the subject, he thinks the class of cases which would be successfully reached by such general laws would be limited, and that local conditions would render State action much more effectual in most cases.

Yours very truly,

January 21, 1896.

FRANK D. HAINES, *Executive Secretary*.

“ Meets with the favor of the majority of our THINKING PEOPLE,” says the governor, and so we also say ; the “ thinking people ” are all right, but, unfortunately, are in the decided minority ; it is the “ unthinking ” people that we want to reach ; it is the “ unthinking ” class that constitutes a constant menace to the physical welfare of the thoughtful.

Can we reach the unthinking people in any other way than by compulsion ? Now that we have opened up this vital subject, we invite a general discussion thereof.

Of Course You are Right.

A GEORGIA paper complains that “ the Atlanta Exposition scattered measles all over the State.” Well, every boy and girl of Georgia has a right to one whack at the measles. It is one of the diseases that every child should be allowed to enjoy. During the late war 50,000 brave soldiers in the two armies died from measles, directly and indirectly. It was especially death-dealing to “ country regiments.” Measles, whooping-cough, and mumps are three diseases which children should be allowed to wrestle with and be done with them. They are all wretched diseases to encounter in later life.

Editor of THE ANNALS OF HYGIENE, Philadelphia, Pa.

Dear Sir : The above clipping from the editorial page of the *Chicago Inter-Ocean* of January 25 advocates an “ old saw ” that I supposed had been exploded long ago ? This exposing of children to these diseases, that “ they may wrestle and be done with them,” strikes me “ as being the cause of the heavy mortality among children. While the mortality from measles may be greater among adults than children, it leaves the children in such shape they are more susceptible to other diseases. Am I right ?

Yours respectfully,

GEORGE E. SMITH,

1320 Wisconsin St., Racine, Wis.

Of course you are right ; the man who wrote this paragraph ought to read up on hygiene. It is not only folly, it is fatally dangerous folly for any one to hold or teach that the so-called “ children’s diseases ” are inevitable. The editor of this journal has never had any of them, and his experience can be paralleled by thousands of similar experiences. There is no necessity for any child to have measles, whooping-cough, scarlet fever, or any other disease, and every case of such disease evidences negligence

somewhere. Very often we cannot lay the blame where it belongs, but all the same, some one is to blame, and, in time to come, some one will be punished, when sanitary education is universal.

Functional Nervous Diseases.

(CONCLUDED FROM FEBRUARY ISSUE).

NOW, in conclusion, in order that our ideas may be *practically* understood, let us outline the practical workings of our propositions.

When patients come to us complaining of any condition in which debility or lowered vitality of any part or organ, or of the whole body, is a symptom, in addition to any particular examination of any particular part that may be suggested, we make it an invariable rule to examine the urine for the earthy and alkaline phosphates, and, if we find an excessive deposit thereof, we always, in addition to any other treatment that may be indicated, prescribe a prolonged course of the hypophosphites; not for a week or a month, but for three or six months, and we get good results in cases that have been chronic and intractable for years.

We are fully aware that some physicians will contend that the excess of these phosphates in the urine is the result, and not the cause, of the debilitated condition; this is the usual teaching; our experience teaches otherwise, and results justify us in crediting the correctness of these views. By building up the nervous system so that it can make more and better "vital steam," we improve the functional activity of any and every part of the body.

We do not maintain that organic disease can be cured in this way, but we do claim that when an organ is organically diseased, its ability to functionate will be prolonged if it is supplied with an abundance of good steam from a nervous system that is properly balanced. If any physician questions the correctness of the views expressed in these editorials let him put them to the practical test; no harm can result, and we are simply confident that if he fairly and fully tests them he will admit the soundness of our ideas.

A Cynic.

A cynic is a man who has discovered neither the world's greatness nor his own littleness.



"Move up Front" in Irish.

An Irish street-car conductor called out shrilly to the passengers standing in the aisle, "Will thim in front plaze move up, so thot thim behind can take the places of thim in front, an' lave room for thim who are naythur in front nor behind?"—*Harper's Bazaar*.

Drunkenest Family on Earth.

John Ogden, of Chester, England, has been arrested 130 times for drunkenness and disorderly conduct; his father shared his fate thirty-five times, one sister sixty-seven times, and a second sister twenty-nine times. The turbulent family has cost the State not less than \$10,000 so far.

German Cure for Colds.

A German cure for colds is called egg soup, and is worthy of a trial. Beat up the yolk of an egg in a pint of water, put in a little butter, with two or three lumps of sugar, and a tablespoonful of good whiskey or rum; set the dish on the stove and stir all the time it is over the fire. When it begins to boil pour it backward and forward until it is smooth and has gained a froth.

Brains in the Finger-Tips.

It may not be so generally known that recent post-mortem examinations of the bodies of the blind reveal the fact that in the nerves at the ends of the fingers well-defined cells of gray matter had formed, identical in substance and in cell-formation with the gray matter of the brain. What does this show? It proves that a man can think not alone in his head, but all over his body, and especially in the great nerve-centres like the solar plexus, and the nerve ends, on the palms of the hands, and the soles of the feet. The coming man will assuredly perceive and think in every part, from his head down to his feet.—*Arena*.

Degeneracy.

Dr. Warner, in an address before the British Association for the Advancement of Science, raised the question as to the degeneracy of the male sex. In 100,000 children whose physical characteristics were examined the deviations from the normal type were commoner among the boys than among the girls. Slum life, it was found, stunts the boys much more surely than the girls.

Boys and Girls.

European boys at birth are from one-half to one centimetre longer than girls. Professor Waldeyer, of Berlin, told the Anthropological Congress that met recently at Cassel, but when grown up man is ten centimetres taller than woman. The average weight at birth for boys is 3333 grammes; for girls, 3200 grammes. The European man is superior to woman in strength and height, but the muscles of the tongue are more highly developed in women. Male blood contains 5,000,000 red corpuscles to the cubic millimetre, female blood only 4,500,000, while the average man's brain weighs 1372 grammes to 1231 grammes for that of woman.

Cure for Dandruff.

Suffering much inconvenience from dandruff, and having resorted to many advertised nostrums and other means for relief, among which were various alcoholic solutions of castor-oil, and washing the scalp with solutions of borax and carbonate of potassa,—which latter, although effectual for the relief from the dandruff, seemed to impair the vitality of the hair and cause it to become very sensibly thinner,—I was finally induced to try a preparation of an ounce of the flowers of sulphur in a quart of water, as follows, with the happiest results: The sulphur was repeatedly agitated in the water at intervals for a few hours, and the clear liquid then poured off; with this the head was saturated every morning. In a few weeks every trace of dandruff disappeared, and the hair became soft and glossy. After discontinuing the treatment for eighteen months there is no return of the disease.—*Louisville Medical Monthly.*

Three Things to Avoid.

Confucius said, "There are three things which the superior man guards against. In youth, when the physical powers are not yet settled, he guards against lust. When he is strong and the physical powers are full of vigor, he guards against quarrelsomeness. When he is old and the animal powers are decayed, he guards against covetousness."—*Confucian An., Ke She (ch. vii).*

The Genesis of the Fork.

This year is the 900th anniversary of the first appearance of the fork in Western Europe, according to a German newspaper. In 995 a son of the Venetian Doge, Pietro Orseolo, married the Byzantine Princess Argila, who, at the wedding breakfast, brought out a silver fork and gold spoon. She was copied by the great Venetian families, though the church opposed the fashion as an insult to Providence. It took 360 years for the fork to reach Florence; in 1379 it is found in France, but it was not till 1608 that "the traveller Corgate brought it direct from Venice to England."

Muscular Inactivity.

Many a man who thinks he has a weak heart is merely dyspeptic; many a woman owes her alarming symptoms to tight lacing or insufficient feeding. If the dyspepsia be cured or the tight lacing dispensed with, the heart weakness will disappear. Even when the heart is genuinely weak, the weakness is not always due to special disease of that organ. It may be only part of a general weakness of the whole system, which is easily curable. The best tonic for a weak heart is a brisk walk. Not a doubt of it. The majority of weak, flabby hearts, are weak and flabby because every other muscle in the body is weak and flabby,—and this general weakness and flabbiness are due to want of vigorous use. Exercise of the legs and back and arms gives additional and much-needed exercise to the heart, and the heart grows strong by vigorous exercise exactly as every other muscular organ does,—for the heart is a muscle. If a man has no organic disease of the heart, no enlargement, and no functional disorder, plenty of brisk walking will soon dispel his breathlessness and heart-weakness, other things being equal. The muscular inactivity of the modern town man is the parent of more ill-health than any other single cause whatever.

Vegetarian Boots.

Vegetarian boots are advertised in London. The uppers are made of "pannus corium," the soles of closely water-proofed flax belting. To show that the skins of slaughtered animals are not necessary, the vegetarians say that "India rubber, gutta-percha, steel and iron and brass nails and brass caps, cashmere and cotton, elastic and webbing, wool and list, cork and straw, silk and jute, and even brown paper and wax go to form the modern mystery which still carries the old name of boot or shoe."

Watch the Thumbs.

A physician in charge of a well-known asylum for the care of the insane recently said, "There is an infallible test for the approach or the presence of lunacy. If the person whose case is being examined is seen to make no use of this thumb, if he lets it stand out at right angles from the hand, and employs it neither in salutation, writing, nor any other manual exercise, you may set it down as a fact that that person's mental balance is gone. He or she may converse intelligibly, may in every respect be guarding the secret of a mind disease with the utmost care and cunning, but the tell-tale thumb will infallibly betray the lurking madness which is concealed behind a plausible demeanor.—" *New York Journal*.

Population and Longevity.

Some years ago a prominent medical writer published an account of an ideal "City of Health," an assumedly impossible municipality in which all preventable causes of disease were avoided and the death-rate lowered to two or three in a thousand by faultless construction and organization and absolutely perfect sanitation. The article was widely quoted in the lay and medical press, and everywhere with approval, until a mathematician or an actuary ventured to figure on the possibilities and demonstrated that with such a death-rate without a corresponding reduction in births there would not, in a relatively very few years, be standing room for the population in such a community.

Man is a very prolific animal, and the procreative instinct is one of the strongest in our nature ; certainly this is so with what has been called in continental Europe the proletariat, a class that

includes mainly the improvident poor, and therefore a large proportion of the population of the great cities in this country, as well as abroad. Prudential considerations have little weight with this class of individuals, and were the death-rate low and longevity the rule, the inconveniences of over-population would soon be manifest. As it is, the urban tendencies of this class and the consequent degeneracy (which properly signifies any tendency to race decay) may possibly save us from having to meet with the Malthusian problem in a severely practical form.

If the average of human life were 100 years, as it has been claimed it should be, and were perfect sanitation and the reign of universal peace, the ideal of philanthropists, to be realized, the near future would show an inconveniently over-populated world, unless some providential dispensation stepped in to give us elbow-room, or some social regulations were adopted, such as raising the marriageable age, ruling out all but the physically, morally, and mentally best fitted from the privilege of procreation, or some other similar device. It is doubtful whether mankind would be any happier under such conditions, but they would be found indispensable in the social Utopias such as that of Bellamy, were these ever realized. The rock of population is the one on which, as Mr. Benjamin Kidd, in "Social Evolution," says, all these social systems split: it is the problem of which their authors take no account. Over-population would work its own cure through intensified human misery and degeneracy; possibly, as has repeatedly happened with the lower animals in localities, with the more or less complete extinction of the species.

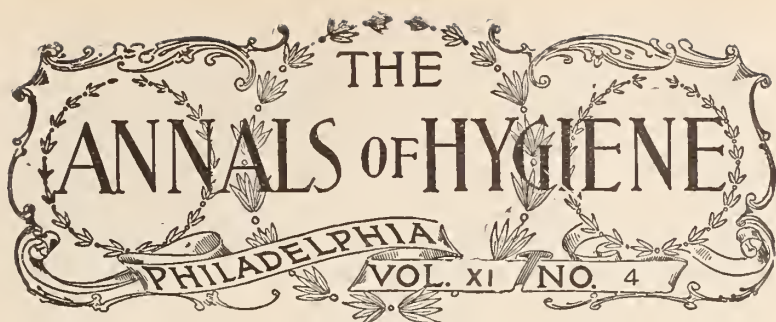
While, however, one can thus even say a good word for human degeneracy, as perhaps on the whole a safety-valve for populations collectively, it is individually an evil, and one that needs to be vigorously met. Man cannot control evolution, and so far as he can be effective he must use his efforts to combat obvious evils and leave general results to work out themselves. There is therefore no excuse for lowering our sanitary ideals. The problems here suggested are not for immediate solution, and matters can be very much improved before unusual longevity and general perfection in health conditions render them at all practical. But they are perhaps worth considering, if it is only to temper a little our hygienic air-castles and as a sort of consolation for our unavoidable sanitary failures.—*Journal of the American Medical Association.*

Odd Things in Heredity.

There is an old lady in New York, says the *Evening Sun*, who, when a young woman, was climbing over a rail fence to escape a big black hog. Her dress caught, gave way, and she fell, cutting her head just at the crown of the forehead. When the wound healed a slight scar showed on her forehead. To hide this she drew her hair down. Being unduly sensitive she could rarely refrain from finding if the hair was doing its duty by fingering the lock. All through her life, and now in any sudden moment of consciousness, her fingers fly to her hair. She has a daughter, now a married woman, who exhibits the same peculiarity. When the fashion of hair changed and women turned their locks back a la Marquise, she found it becoming. But at last was so distracted at not finding her accustomed lock of hair she again adopted her bangs. Now she has a daughter, a girl of 5, who has a way of catching her forelock like a groom. The family made an effort to break the habit, but gave it up as hereditary and hopeless.

There is a man who says that when a child he could not get to sleep without rubbing a piece of Canton flannel. When he got into trousers, and from that time there is a certain area on his trousers that since, when he grows meditative, he rubs the side of his trousers. He has a boy 8 years old. This boy rubs the side of his trousers whenever he is studying or reading. As his fingers are not always clean it occasions much distress. This also is set down as heredity.

Now, pertaining to such cases, there is a paragraph in the *Lancet* which ridicules the transmission of these muscular peculiarities. They are merely family tricks, and the result of imitation. Not only do such likenesses run in families, but tricks of manner, forms of speech, distinguish school-boys educated at different schools. An Eton boy can be recognized anywhere, and Oxford and Cambridge imprint their own stamp on their students. These facts lead to the more important conclusion that education by imitation is not sufficiently considered in modern systems. A girl who is the companion of a woman of good figure, responsive face, and easy movement is more likely to be easy, graceful, and engaging in conversation than one brought up by a clumsy woman from books. Companionship is at the root not only of manners, but of style and figure, which are often mistakenly attributed to breeding.



COMMUNICATIONS.

Medico-Hygienic Care of the Body.

BY RANDOLPH FARIES, M.D.,

Philadelphia,

Director of Physical Education in the University of Pennsylvania.

THE being man has a wonderful memory, and each department of his being increases this faculty according to its use. Daily do we see scores of men, women, and children who have a wonderful memory in one or more directions, but least of all do we find the memory of muscles manifesting itself; and not infrequently disease gets the upper hand, because the physique has been neglected. Further, we find ill-proportioned bodies because the muscles are weakened in one or more regions of the human frame by a lack of development, or, what is still worse, by an absolute neglect of them. A perfectly erect, symmetrical, graceful physique is rarely if ever seen, and is it any wonder, when for generations the muscular system of mankind has been allowed to stand in awe, while mental occupations and society have consumed all the time one spends during their life. There is not a single person who has been accustomed to systematic exercise who will fail to sing the praises of its good results. It not only adds grace and courage to the individual, but also gives greater play to all the vital organs one possesses. Should children be censured for inheriting ungainly bodies, when their ancestors have thus neglected their own physical being? Is it not the duty of every parent to see

that their children shall possess a muscular system which shall enable them successfully to cope with the many problems of life they are sure to encounter as they grow up and go out into this great republic to fight their own battles. The drooping shoulders, the ill-gotten walk, the narrow chest, the pale countenance, the weak nervous system, the poor digestion, the rheumatic joints, the crooked spines, the deformed ribs, the weak lungs and heart are in many instances directly traceable to an undeveloped and weak muscular system, and is it any wonder diseases or deformities so frequently follow ; especially when parents are culpable for having transmitted to their children this weakened condition ? Many persons do exercise "some" muscles, and a good appetite and refreshing sleep follow, the final result being a satisfied feeling as to the muscles employed ; but this sort of work accomplishes nothing more than a deformity, because a few groups of muscles will be over-developed, while others are weakened, and if the exercised has chanced to use the muscles of one's back we find as an ultimate result that the anterior part of the chest has been actually weakened, there is less room for the heart and lungs than there was in the beginning, and this not infrequently produces disease of these organs. Could the children of the present generation have inherited strong physiques thousands of them would not know what poor nerves, weak lungs, weak hearts, etc., are, and would never have been troubled with the weaknesses and diseases I have referred to. Is there one of us who does not know scores of men, women, and children, whose very expression and pale face point to a poor physique and an absolute want of muscular stamina, who are always pale, always tired, never gain a pound of flesh, and who drag through their daily work, only too glad when bedtime has arrived, whose appetite is far from good, whose digestion is sluggish, and sleep far from sound, and all this due to a lack of a little exercise accompanied by the proper medical advice. Is it any wonder, then, that one so frequently reads of nervous exhaustion which leads to a shattered condition of every part of the body ? All persons who use the brain severely break down sooner or later when they are lacking in a strong muscular system, because their physique cannot stand the strain. If parents were as anxious to have their children drilled muscularly, and by as competent a teacher, with proper medical guidance, as they are to have them instructed mentally, what a beautiful, robust, and healthy child they would possess ;

but, alas, the physical is neglected and allowed to drift for itself, while the mental becomes a monstrosity, and premature death not rarely follows, because there is a lack of balance between the physical and mental. Had uniform development been sought from birth such a thing would never have happened, and the daily exercise, which the offspring should have been trained in, would have added a score or more of years to its life, instead of allowing it, by a disregard of its physical being, to suffer with a weak constitution. Is it any wonder that so many physiques of children break down long before they should, when the father or mother is to blame for the child's physique? More than one characteristic is inherited from one parent or the other, and not infrequently we see the temperament, the color of the eyes, the walk of the father, the voice of the mother, her mental capacity and disposition cropping out in the child. Again, we see a child inherit the constitution of the father, who is strong and robust, while a second will inherit that of the mother, who is weak and delicate, or *vice versa*. Now add to the above predispositions to disease want of exercise, bad air, poor ventilation, unwholesome food, lack of bodily care in clothing and bathing; and is there any cause for surprise when disease overtakes the child? Children who are healthy, who are required to follow strict laws of bodily hygiene, who have good physiques are rarely met, and too often are myriads of children seen surrounded by such a total lack of hygienic care that disease often follows. No general system of physical work has been common in America, until within the last ten or fifteen years, and I am sorry to add that in girls' schools, where it is most needed, it is but little used, and in many of these schools it is conspicuous by its absence. Some of the schools for boys have paid greater attention to the demands of the body and have adopted a course highly commendable, because each student in a great many schools—not all—is compelled to undergo a rigid medical examination, after which he follows a scientifically-prescribed course of exercise. This is not all: in some of the boys' schools lectures are delivered upon bodily hygiene, physiology, and anatomy, by physicians who have made a specialty of physical culture, and from this systematic work the boy learns how, scientifically, to care for his physique. It is in all the public schools of the United States that compulsory physical education is most needed, because the boys and girls have not the luxurious homes the children have who go to private schools; they

do not have the same facilities in reference to bodily hygiene, nor are their rooms at home so well ventilated, and, alas, their food is too often unwholesome from necessity, not from choice. Many of our citizens will say the ordinary games boys and girls indulge in are sufficient to keep my child well.

This is true in a measure, but the exercise may be the means of producing a deformity, or lead to disease because one group of muscles is used too much, or, indeed, exclusively. Many are the cases of deformities I have seen due to one sport or another; for example, a case of spinal curvature came under my care some years ago, which was due to playing tennis constantly, and hundreds of cases of contracted chests, drooping shoulders, and spinal curvatures are due to riding a bicycle, playing the piano or violin, simply because the boy or girl assumes a fixed position and uses certain muscles of the chest and upper extremities to the exclusion of others, and in this way the latter are weakened. Few persons know how to breathe properly, and many exercise daily without ever calling the lungs into play to any extent, thus omitting to develop a power which is the most important in the whole body,—that of respiration. Moreover, persons are found who imagine they can breathe well because they are capable of taking a deep, full breath; but ask them to exhale well, and you will find they have very little control over the abdominal muscles which control the expiratory movement; this being a perfect manifestation of weakness in this region. When a person is taught to breathe properly, the lungs and heart can be greatly strengthened, and heart and lung troubles may also be cured when proper medical attention is added. Good results follow when medical advice is properly followed, and poor or even evil results when the advice of the doctor is omitted in reference to exercise, or when the prescription is given by a quack. Ask any comparatively healthy man or woman, boy or girl to run a mile or two slowly, and how many would be able to do it? Not one in a thousand, and why? Because they do not possess enough muscular stamina in conjunction with a well-developed pair of lungs and a strong heart to accomplish it. America is proud of her many achievements, and she should be; but if American boys were compared to those of other nations, I am afraid a sense of shame would creep over their countenances, because it would have been found that the boys of foreign countries were possessed of good physiques, and simply because Sweden, Germany, Eng-

land, and Austria demand that the boys' physique shall receive compulsory training while attending school. Their exercise is chosen with scientific care and good medical advice, and persisted in, hence the body becomes strong enough to endure everything one will encounter in ordinary life. Children who have been born of consumptive parents may be so benefited by exercise that they will enjoy a happy life and also be useful and capable of taking care of themselves as they go through life without ever being overtaken by the disease. The same will also apply to children who inherit diseased or weak hearts and nervous diseases, as well as those suffering from an impoverished condition of their blood. Exercise which is indulged in spasmodically is worse than none at all, because one is liable to strain the muscles and weaken the heart and lungs by taxing them too severely before they have been properly prepared, as they should be, by systematic work. If parents only knew how greatly exercise would protect their children from ill health as they grow up, they would consult their physician more frequently, and then compel their children to care more for their bodies; but it is not until they find disease or deformity overtaking their child that they go to the doctor, only to be told all the trouble might have been avoided had a little precaution, consisting of a little exercise, been indulged in. Think of the vast number of fathers who have spent thousands of dollars preparing their sons for entering West Point and Annapolis, never knowing that, no matter whether the boy was successful mentally, he must also undergo a rigid medical examination in order that the authorities may know whether the boy is as well equipped in his physical as he is in his mental capacity. If he fails to pass his physical examination, he is rejected, not because his mind has not been well drilled, but because the government, and rightly, too, wants students who can stand the physical tests as well as the mental strains, and men whose bodies will serve them when called upon to undergo a long march or severe exposure. An evil existing at the present time in schools where exercise is taught is that some of the pupils know more than their teachers, while neither the teacher nor the pupil knows anything about the way exercise influences the different bodily tissues, and both are absolutely ignorant of medical knowledge. Parents naturally feel complimented when told that their children are bright, and especially so when the child stands at the head of his or her class in school. Indeed! but look to it

that your child does not fall far behind as time goes on when it enters public life and its physical development is needed as much if not more than its mental. When you awaken to the fact that your child's muscular stamina has been sadly neglected, or, what is still worse, when disease has attacked your child's physique and impaired its career, which seemed so bright, ever after. If it is not too late, and you decide to send your boy or girl to a gymnasium, be careful lest the gymnasium is productive of more harm than good, and, above all, do not put implicit confidence in the fact that the exercise is properly prescribed. If your child be troubled with any nervous disease, heart, lung, or other complaint, for which you have consulted your physician, and he has told you to have the child take systematic exercise every day, have it do so under his directions, and put that child under a person who is thoroughly competent to instruct it in the kind of exercise your physician has prescribed. Moreover, consult him whenever he may deem it necessary for the welfare of the child. In this way the exercise will accomplish wonderful results, and bad results will never follow, which will surely follow if the advice of a physician be omitted. What is to be said of the boys and girls who have devoted a great deal of time to exercise? Not one of them knows the action of their muscles, and hence they are utterly incapable of developing themselves in a symmetrical manner; the result is that usually the boys have developed their arms and chests, while the girls have developed their lower extremities; the boys in a great many instances having thin legs, while the girls possess thin arms and poorly-developed chests, which would be hideous to gaze upon were one to see them exposed. Girls are cunning in covering up their poorly-developed arms and chests by having the sleeves and waists of their dresses so made that the result may give the appearance of a good figure. If they only knew that these parts of their body could easily be developed by exercise and their figure made symmetrical and strong, they would seek exercise more and consult their dress-maker less.

Centenarians.

According to Sir Benjamin Ward Richardson, the normal period of human life is about one hundred years; and seven out of ten average persons, if they took proper care of themselves, ought to attain to that age.

How to Prevent Contagious Diseases.¹

BY GEORGE E. SMITH,

Late Health Officer of Racine.



WAS somewhat surprised when asked to produce and read a paper on "How to Prevent Contagious Diseases," as I am neither scientist, lecturer, or writer.

If I were not deeply interested in this great modern need, I would have refused this lame attempt upon a subject that a course of twenty lectures could not exhaust. And yet the simple rule, *avoid all excesses*, would be a sufficient shield for all healthy persons of sound mind; and even those who are debilitated have simply to add, "*An avoidance of all things that do not agree with them.*"

Editor J. F. Edwards, of the "ANNALS OF HYGIENE," says, "All that it is necessary for a healthy person to do is to avoid the causes of disease, that he may retain his health; this is all that the cow, the dog, and the cat does, yet it proves efficacious. It would be hard to make a cow do anything injurious to her health, merely because she is devoid of intellect, and has no power, therefore, to antagonize the instincts of nature. Candidly and thoughtfully reviewed, misdirected or misguided intelligence must be regarded as a curse to humanity, so far as health is concerned.

"The instincts of nature are all conducive to health; the devices of intelligence are causes of disease. Nature never ordained cesspools, balls, fried oysters, tight lacing, artificial life in cities, business anxiety and overwork, tenement houses, nerve-exhausting rapidity of living, poisonous intoxicating liquors, or that putrefaction should occur in such concentration as to poison the air we breathe; these adjuncts of civilization are all the outcome of intellect. It is not from the comparatively few really thoughtful, reflective, intelligent, sensible persons danger is to be apprehended; but from the great masses who, while endowed with intellect, have really less common sense and a much less balanced instinct than the dog, who at once scratches a lot of earth over the discharge he has deposited upon the ground."

¹ Read before the "Lend a Hand Club" at Racine, Wis., February 4, 1896.

Doctor Edwards's language is harsh, and might be deemed insulting if it were not all too true. It is a sad comment upon the so-called civilization of this century. The advantages that ought to have come to the masses through intellectual advancement have been lost through a habit, which centuries of training has made a sort of second nature, of *allowing some one else to do the thinking*.

Through this defect, leaders, who had neither brains nor cause, were enabled to lead millions of beings to their own destruction. In ancient times the leaders were usually crafty astrol-ogers, who made religion the "silver veil" behind which they hid designs and plots that made even Elbis blush; and the awe inspired by these hidden mysteries enabled priestcraft to squelch all *thinkers* and quench the people's thirst for knowledge, and led them into blaspheming the Almighty by charging Him with sufferings that came from disobeying nature's laws.

In epidemic and plague the simplest curatives were neglected or rejected, and the multitude led by a priest marched the streets and beat themselves with things to appease an angry God, but only succeeded in debilitating and making themselves more susceptible to the disease.

There were many noted and noble exceptions among priests and clergymen, whose gains were *persecution* from their fellows, and some, like Bruno, were burned at the stake. As late as 1846, the clergy of the Scotch church took Doctor Simpson to task for administering chloroform to women who were about to undergo a surgical operation, and yet these bigoted "pulpit pounders" could only offer this questional and cruel argument, "Woman having committed the first sin, she should suffer the full penalty." Doctor Simpson found but one woman who objected; she declared "it was unnatural." The doctor asked her how she came from Belfast? "By steamer," she replied. Whereupon the doctor remarked, "That was a most unnatural way; the natural way was to *swim*."

A prominent writer says, "We, to-day, have a dyspeptic Puritanism which is continually whining over the necessity of suffering as a means of grace." And "God's will" must shoulder the entire responsibility of Robbie's death, although it was a clear case of mother neglect and too many green apples.

Many incidents similar to the following is quite conclusive proof that there are still a great many whose goggles of supersti-

tion are badly blurred with the mildew of barbarism. "In 1892 the peasants of a village near Moscow feared a visitation of cholera, and proceeded to put a charm around the place. Six virgins led by two widows dragged a plough around the place at midnight, while a third widow preceded them carrying a banner with an image of the Virgin Mary ; they believed cholera could not cross this magic circle."

"Hippocrates, 400 years before Christ, defined the principles of public health and sanitation under the headings, 'Air, Aliment, Exercise and Rest, Sleep and Wakefulness, Repletion and Evacuation, and the Passions and Affections of the Mind ;' and laid down as an axiom that there must be an exact balance between food and exercise, and that disease would result from *excess in either direction.*"

Parks says, "Taking the word hygiene in its largest sense, it signifies rules for the perfect culture of the mind and body. It is impossible to disassociate the two. The body is affected by every mental or moral action, the mind is profoundly influenced by bodily conditions. For a perfect system of hygiene we must train the body, the intellect, and the moral faculties in a perfect and balanced order. . . . The rules would commence with regulation of the mother's health while bearing her child, so that the growth of the new being would be as perfect as possible. Then after birth the rules would embrace three epochs,—of growth, of maturity, when for years the body remains apparently stationary ; of decay, when, without actual disease, molecular feebleness, and death commence in some part or other, forerunning general decay."

Doctor Landon C. Gray, of New York, says, "If we could keep men and women clean, say wash them thoroughly twice a day, give them proper nourishment, digestible food that their needs call for, give them eight or nine hours sleep every night, give them plenty of exercise in the open air and the sunshine, the microbes of disease would largely go out of business."

From causes already enumerated, "sanitary science made little progress until 1838, when Doctor William Farr established the British Registrar-General's Office ; since then the work of determining the laws and principles of health has been carried on with unflagging zeal by investigators in both Europe and America, and Dr. Senn claims has made greater progress in the last fifteen years than was made in twenty-one centuries."

But we are still confronted with the mighty task of teaching the masses the true principles of hygiene and the art of doing their own thinking, for now, more than ever before, do they require the latter. So given to *excess* are we that even some of our most prominent scientists cannot write without going into excesses,—if in an argument. And then we have a “right smart” of prominent *guessers* who are making some pretty “wild stabs,” in the hope that some “chance hit” will make their prominence permanent. The bulk of these gushing guessers are a class of physicians who purchased their diplomas at some bargain counter, and their prominence is a notoriety purchased through “judicious advertising” in the newspapers.

Inasmuch as disease-germs have pre-empted a goodly portion of the earth and are capable of multiplying by the millions daily, and even the well may carry and inoculate the predisposed, it is clearly our first duty to reduce the number of predisposed. Dr. George M. Kober, of Washington, D. C., says, “In addition to the germ, we must have a suitable soil for its proliferation in the system, and this individual predisposition or vulnerability which renders the body more liable to be acted upon by the germs may be the result of faulty nutrition, fatigue, impure air, mental depression, or unwholesome food.”

As the *excessive use of intoxicants* leads up to the most of these causes of predisposition, you will excuse me for devoting a few moments to “king alcohol.” In 1875 the people of the United States consumed 381,065,045 gallons of spiritous and malt liquors,—8.67 gallons to every man, woman, and child; and in 1893 the consumption had increased to 1,028,731,908 gallons, or 18.04 gallons per capita; and this does not include hundreds of thousands of gallons of patent cure-alls, “which are 40 per cent. alcohol.” In the attempt to cure the headaches and right the deranged stomachs that are the outcome of all this drinking we expend many millions for more cure-alls and pills, consuming about 180 tons of pills yearly. Our expenditures for patent medicines is something enormous,—don’t just remember what the figures are; \$98,000,000 was received by the English government in 1893 *just for the revenue tax* on patent medicines, and in 1860 they collected but \$210,000.

Please bear in mind that two-thirds of this patent trash is just as severe upon the stomach, heart, and kidneys as the alcohol. It is estimated that *just one patent medicine* kills 17,000 children annually in New York alone.

Political "pooh bahs," who cannot buy a congressman without consuming spirits enough to pickle two bodies, tell us that all this outlay for drinks, with all the attendant pains, misery, and death, "is necessary to the raising of revenue." In 1893 we received \$24 786,496 in payment for licenses; and the additional expenses we had to meet on account of the traffic were \$18,721,383 for court and inquest fees, \$9,226,376 for prison and reformatory fees, and \$39,958,816 for additional police service and charity, which foots up \$67,054,984 *more* than we received in payment for licenses. Police records of seventy-seven cities show that 744,575 persons were arrested for drunkenness in one year,—1 to every 35 of population; 12,000 persons die annually in the United States from alcoholism; and in Stockholm 90 out of every 1000 deaths are from same cause. Dr. Bollinger, of Munich, a beer centre, says, "he rarely finds a person there with normal heart and kidneys."

But the arrests, ailments, and deaths of drunkards is far from being "the be all and the end all." A bright and vigorous-looking old gent of 60 years did so much bragging of "how he had drank whiskey for thirty-five years, and it had not hurt him," his family was hunted up, and the investigator found his oldest child, a son 35 years old, a fine specimen of vigorous manhood, but his second, a daughter, was almost a nervous wreck, and the youngest child, another daughter, was a total wreck and subject to rickets. The superintendent of a child's hospital, at Berne, Switzerland, says, "Only 45 per cent. of the children of intemperate parents had sound constitutions, while the sound children of temperate parents was 82 *per cent.*"

European assurance associations are complaining "that *excesses* have diminished the average years of life among the so-called better class." And why not? "Bargain counter" sales of indulgences, by both society and the church, have brought about such a brazen boldness, one is no longer obliged to go "a slumming" to see men so excessively beastly the monkey has become enraged at Darwin's insult, and the hog wants to resign his scepter as the king of filth. Men no longer find enjoyment in wholesome pastimes,—nothing is recreation for them that is not coupled with "*excess*," hence comes a nervous and debilitated generation of children, and hygiene should be the study of all who are charged with care of children in our public institutions; it should be one of the principal studies *in all schools*, and each teacher

should be an expert in nerve-control, and a pupil never crowded while nervous; this is asking no more of a teacher than a horse-fancier requires of his jockey, for his common sense tells him a horse will accomplish far greater feats if he can be kept from getting nervous.

The best authorities throughout the world are to-day making this question of nervousness a prominent feature of modern hygiene, and many of them are very emphatic in their disapproval of "the cramming" now going on in our schools.

Dr. J. L. Gillcrist says, "When I hear of a girl who stands high in her class and graduates with the highest of honors, I look for a physical wreck, and generally find it."

Of course, the first great cause may have been a nervous mother, or one of those fool mothers who has wrecked herself and her conscience by trying to avoid the title of mother. If the approaching woman keeps her brain clear of the rile of opium and drink, the coming girl may be a superior mother. If we could amputate health boards from the body politic and place them in the hands of the women the people's millions might be spent far more advantageously; if the head of each health department was a woman possessed of the humanity and ability of Mother Bickerdyke, mayors and common councils (who pronounce all health-moves a "fad," when not coupled with a contract) would have an up-hill job in laying disease-producing pavements and short-lived sewers; and there would be no such incompetence and heartless indifference like unto the following:

Upon November 20, last, some one in Chicago discovered that diphtheria was quite prevalent, and a looking-up of the record disclosed these facts: In August, 1894, there were 55 deaths from diphtheria, 76 in September, 104 in October, and 140 in November; and for the same months in 1895 there were 114 deaths from diphtheria in August, 134 in September, 240 in October, and 135 for the first eighteen days of November,—an alarming increase that awoke the whole health board, which made an immediate call upon the tax-payer for an emergency appropriation to pay for additional medical inspectors, disinfectors, antitoxin, and physicians to administer the latter. Upon November 27 the *Inter-Ocean* gave us some idea as to how the fight was progressing, and revealed the fact that the New York Board had probably been caught napping, as they reported 152 cases and 28 deaths for the week, while Chicago had 151 cases with 51 deaths for the same

week. Later on the newspapers tell us "antitoxin was a success in downing the plague." If this be true, the board of health ought to have been arraigned before the grand jury, for had they been watchful the alarming increase of August could have been met in the same prompt manner to the saving of hundreds of lives, a vast amount of distress and expense to the sick, and a bill of extras for the tax-payer.

At Hot Springs, Arkansas, in the fire of last February, a man was taken sick, and the physician called pronounced his ailment eczema, but after his death, five days later, the physician's certificate gave "blood-poisoning as cause of death."

Hot Springs had a board of health, and yet that man was allowed to run the streets, and twice stood in line at the post-office, awaiting his mail, with his face broken out in a manner that clearly indicated small-pox; and when he died his body was embalmed and shipped to Marysville, Mo. With 82 cases and 14 deaths there came a panic, and the board made no attempt to stop the fleeing people, some of whom were already sick, and all had been exposed, hence the disease was scattered broad-cast, and only shotgun-quarantine saved some of the threatened points. The 192 cases with 44 deaths, at Hot Springs, in seventy-two days is a pretty fair illustration of how susceptible the debilitated are to disease.

Am I wrong in suggesting the grand jury as a remedy for checking this needless waste of life and money? Officers in the army were court-martialed and punished for needlessly sacrificing the lives of their men; railroad companies are made to pay damages for life and limb lost in *accident*, and a life-saving crew would be disbanded in disgrace, and without pay, if they displayed such incompetency and neglect of duty. The heads of these boards of health would, no doubt, put in the plea of "too much politics,"—it would be a just plea, in fact, it is the key to the whole situation.

The average ward politician of to-day looks upon all health ordinances as a "fad," but is quite willing to squander the taxpayers money in a pretense of enforcing them, as it makes places for and pays wages to a class of men whose sole recommendation is vote-getting, and, in nine cases out of ten, this too is *pretense*. The shameful scrap with Dr. Kempster, in Milwaukee, in the summer and fall of 1894, is a fair sample of the extremes to which these political guerrillas will go in their efforts to fill the appoint-

ive offices of a city with their ward heelers. These not only sacrificed the business, health, and lives of Milwaukee people, but also made our State a greater sufferer from small-pox than any other.

If we cannot sever health boards from politics we had better refuse being taxed for their support; expected service from a health board is very apt to make the people neglect precautions they would naturally take themselves.

Seventeen cities in North America, selected because they cover all climates of this country, and having a population of from 18,000 to 1,750,000, in 1893, expended \$624,783.02 through their health boards,—a trifle over thirty cents *per capita*. Chicago expends from \$200,000 to \$300,000, through health boards, annually, and yet her share of small-pox, from January 1, 1894, to April 23, 1895, was 1571 cases with 928 deaths, out of a total of 6428 cases with 2124 deaths in the whole United States. The total deaths, from all causes, in Chicago for 1894, was 27,682, and over two-thirds of them were children under five years of age. Herod was a failure when compared to modern neglect and incompetency, but his mode of disposing of infants was more merciful.

As these meagre and unsatisfactory returns are leading people into doubt regarding sanitary science, I have given more attention to difficulties encountered than to preventive measures. (1) Because sanitary science is entitled to this very valid excuse for its slow progress and *seeming* inefficiency; (2) it is useless to talk of measures we cannot make effective so long as the present political interference exists.

One hundred and eighty civic reform associations, that have been organized in the United States within the last year and a half, are the outcome of a wish to escape this "old man of the sea," and every city should have such an association. And every city, town, and village should have a sanitary association, "to bring together all who feel an interest in the investigation of facts and principles relating to public and personal hygiene, and who desire to diffuse among the people such information as will secure deliverance from avoidable causes of disease."

Not one of those select associations that assemble, now and then, to hear one of their number read a paper, but an energetic lot of observing fact-gatherers, who would publish and republish, distribute and redistribute these facts, until the masses believe and put in practice true hygiene rules. See that health-depart-

ment officers and appointees are persons of sufficient intelligence to realize that they are like the vedettes of an army, expected to be *always on the alert*, perfectly posted in regard to their surroundings and ever ready to sacrifice themselves in the prevention of surprises. They should be alive to the fact that pure food is an all-important point in sanitary matters, and is only obtained by the rigid enforcement of pure food laws, and this requires *eternal vigilance*. With thousands of tons of food being condemned and destroyed at points where food inspectors are vigilant, it is natural to expect an increase of such food put upon the market where there are no food inspectors, or where inspectors are negligent; with millions invested in tainted and adulterated food the holders spare no pains to learn who is negligent and who is not, and through this dodging for a market the poor become the greater victims.

Milk, our most important article of food, is to-day charged with causing a large percentage of the deaths by tuberculosis; and it is also a conveyer of other diseases; hence every health department should have a capable veterinary surgeon, who should inspect all cows three times a year, and all found infected with disease should be destroyed. A close watch should be kept over all milkmen and their premises inspected often; cleanliness, proper food, and water for cows should be insisted upon. Drs. Busy and Kober found that 130 epidemics of typhoid fever had been traced to contaminated milk; and in fifty-four instances the milk became so through washing cans in infected water; one of these was a milkman whose well got low, and although he washed his cans but once with the infected water of his neighbor's well, thirty-six of his customers came down with typhoid fever. Such a mountain of evidence has accumulated, there is no longer any doubt of the transmission of all contagion through milk.

That sanitary science has been beneficial is proven by the increased duration of life among the men who have given this matter the most attention. Dr. Salzmann, of Essling, Germany, says, "The records of that country show that in the sixteenth century the average duration of life among physicians was but 36.5 years; in the seventeenth century, 45.8 years; in the eighteenth century, 49.8 years; and at the present time it is 56.7 years.

Many physicians and scientists have hugged the one hundredth mark pretty close; three eminent French physicians were

as brilliant upon their one hundredth birthday as at any time in their lives.

The United States Census of 1850 shows that we then had 2555 persons that were over 100 years old ; 1768 were colored, of which 1425 were slaves,—the slaves outnumbered the whites and free blacks by 295, and the females outnumbered the males by 401. We then had 14,167 persons over 90 years old, and the females were ahead 1641. In the 1890 census of Japan is shown 11,245 persons between 90 and 100 years old, and 177 over 100,—one of these was 107. In the English census of 1891 is shown 9185 persons between 90 and 100, and 33 over 100,—one of these, a woman, was 116. The French enumerators found 213 persons over 100, and only 66 were men. In 1893, in the Province of Kieff, Russia, fourteen persons died who were upward of 100 years,—two were 110, one 114, and one 115. "Among the Moquis Indians (who number less than 200 souls) there are 15 persons over 100, and an old woman, named Watsuma, is said to be 184 years old." "Among the Indians of Southern California 120, 130, and 140 years have been reached." "In 1893 a Spanish lady died at Monterey, Mexico, whose age was shown, by records of Madrid, to have been 132 years." "In 1893, at Philadelphia, a colored man by the name of Gibson died, whose age was 123." In 1894, Theresa Bondin died at St. Paul and at the age of 104. John Rogers, of Portland, Oregon, is hale, hearty, and active and is over 104. At Ives, England, there are five brothers and two sisters whose average ages are 78.3 years. Lieutenant Savin, who went to Moscow with Napoleon and did not return, is 128 years old, and living at Saratoff. Lieutenant Gibson found, in a village of Peru, 100 persons who were over 100 years old ; and not far from there was living a man, and apparently enjoying life, who was 140 years old. At Ambota a Madan Cucolon had recently died at the age of 114, but the neighbor, Don Jose Sota, was still on earth and over 120. "A carpenter by the name of Banos gave his age as 140, when called as a witness in a judicial trial." In 1893 a man died at Vera Cruz, Mexico, and at the age of 137, and another died at Teluca, whose age was said to have been 192. On January 25 last, Hiram Lester died at McDonough, Ga., in his 129th year, and he left a daughter aged 95 and a son aged 92. At Zomboli, Commune of Banat, Hungary, an old couple celebrated their one hundredth wedding anniversary ; they were married in May, 1793, and were supporting themselves upon a small

farm in 1893. Dr. P. C. Remondino, in speaking of these extreme ages reached, says, "They accentuate the influence of a strong enduring animal constitution." The *London Lancet* says, "It is not useful work, but worry, that kills men. Not overwork of the body so much as overwork of the stomach or liver or kidneys. So long as the stomach is intact, overwork of brain or muscles is easily repaired. Hard work is healthy. Evil results flow not from excessive work, but from neglect to give each of the organs its due and proper amount."

Another writer, commenting on these extreme ages, says, "These old men were probably free from care, from religious doubts, political worry and ambition; and testimony shows they were simple in their habits, temperate, and even abstemious,"—in other words, theirs was an "*avoidance of all excesses.*"

The Problem of Work.

BY E. C. BAILEY, C.E., M.D.,
Yardley, Pa.

(Concluded from March issue.)

PART III.



It has been shown in the two preceding papers that the worker's energy is at best with difficulty preserved; that his present tendency is to draw with increasing frequency upon the fund of reserve power already notably diminished by previous excess, and that the existing causes of the progressive decline are to be found in the every-day routine of his business and domestic life. This article, the last of the series, will be devoted to a brief consideration of a few measures suggested for the purpose of eliminating some of the worst factors of the problem of work, or reducing their influence to the minimum.

The evil of overwork, with its attendant hurry and excitement, is beyond the power of physician or reformer to remove or lessen. While human nature remains as it is, and always has been, the strife for supremacy will occupy the attention of man

to the exclusion of all other aspirants to highest favor. The purchasing power of the rewards of material success is so great that the luxury-loving will covet and endeavor to win them until the ability to compete disappears in the invalidism of overtaxation, disease, or senile degeneration; and the applause of the multitude and the sweets of social, political, and financial autocracy will continue to stimulate the ambitious to unceasing effort so long as the strength of youth and manhood endures.

The factors of rest, recreation, and sleep, too often abused or neglected, much to the worker's detriment, may easily be modified, the income therefrom increased, and the waste thereof prevented. The brief mention already made of these channels of loss is sufficient to indicate the character of the remedy. The course to be pursued in the effort to turn them into sources of profit is so plainly defined that the wayfaring man, though a fool, need not err therein.

The most important factor of the problem capable of improvement, and the one above all others requiring immediate attention, is the condition of the alimentary canal wherein grim dyspepsia now reigns supreme. The worker's digestive power must be increased to the point at which the income from ingested food shall equal and, if possible, exceed the outgo expended in the daily labor. The end cannot be accomplished with medicine alone. Drugs do little more than stimulate the weakened function or furnish artificial energy to compensate for its temporary inactivity. In this case the physician's potions can be of no great service, largely because the average worker has dosed himself for years with every imaginable combination of tonics, proprietary and officinal, and his tissues now respond but feebly to all remedies of the sort, no odds how skilfully prescribed. In mechanics, when the demand for increased power is imperative, the fire low, and the draught for the time being irremediably defective, there is but one thing to do,—the furnace must be supplied with fuel of a more combustible nature. The modern worker is in a similar plight and must be treated in like manner,—his food must be improved. The bulk of the work of restoring his lost vigor must be done where the primary source of his power is prepared.

The modern kitchen is an insurmountable obstacle in the way of the sceptics, denying the doctrine of demoniacal possession, for in and about the frying-pan may be found a malevolent

host continually materializing to vex and harm. Were these hostile spirits completely exorcised it would be an inestimable blessing to mankind; and the boon would be still greater were the eviction supplemented as in the miracle of holy writ, wherein we read that the devils thus cast out entered into the bodies of swine and caused them to run over a steep cliff into the sea. The banishment not only of the frying-pan, but all the abominations into each of which some porcine derivative enters as an essential ingredient, would be a triumphant victory for reform. Could the truth be known—could all the evils accruing through the instrumentality of this popular utensil be accurately or even approximately estimated—there is little doubt that the result would show that its operations are under the personal direction and supervision of the arch-fiend himself, or, at least, warrant the conviction that it is his most potent and efficient ally.

The just essential of the much-to-be-desired culinary reform is a radical change in the appointments of the kitchen. The obsolete apparatus should be replaced with improved utensils and instruments of precision added, that the same accurate results may be obtained as in other branches of industry in which raw materials are refined and perfected for special uses. The rule-o'-thumb methods doubtless served a fairly good purpose when the worker's digestive power was second only to that of the ostrich, but cooking must become an exact science to supply his latter-day needs.

The second step is a study on the part of the purveyor of modern culinary methods in order to endow the finished products with digestibility, palatability, and variety. The first of these qualities has already been sufficiently discussed and requires no further mention here. Palatability and variety serve to tempt the appetite, if poor, and are of value even when hunger furnishes the best of sauces. Sapidity and pleasing novelty stimulate the secretions of the whole alimentary tract,—of two dishes alike in all other respects, the one that "makes the mouth water" is the more acceptable and digestible.

The kitchen having been restocked and its methods revolutionized, as suggested, the third essential is the adaptation of the means at hand to the peculiarities of the work to be done in order to accomplish the end in view. However skilful the smelter in refining auriferous ore, unless a master of the goldsmith's art, his attempts to fashion the yellow ingots thus produced into articles

of rare beauty in value, far exceeding that of the precious metal they contain, will surely fail, and the effort to obtain the best results by merely serving the dyspeptic with well-cooked and tempting viands will be little better rewarded. The phases of indigestion, and the personal peculiarities of mental, moral, and physical make-up, are so many and varied, that each individual case is a law unto itself, and must be so considered and treated in the matter of every-day diet as well as of medicine.

While this method of utilizing the products of the perfected cuisine may be made of vast benefit to the adult worker, the best results are promised by its application to the younger members of the household. So great are the latent potentialities of immature cells, undergoing the process of development, that many an infant inheriting but a small measure of vitality may be reared to manhood or womanhood and endowed with a goodly store of reserve power by supplying the feeble body during the first two decades of existence with ample pabulum of high grade, selected, prepared, and administered with the sole idea of conserving and increasing the physiological value of every part. To this end the only plan to be followed with reasonable hope of success must be based upon the knowledge acquired from a careful and thorough study of the individual's needs. A plan of this sort, generally adopted and systematically carried out, could not fail to be productive of untold good. Increase the average physical power of each succeeding generation, however slightly, and teach it to continue the work in the light of the experience gained during its own developmental period, and the labor would gradually become lighter while the fruits thereof would progressively grow in value. The diminishing reserve must be cared for, the downward tendency checked, and the lost ground regained, and the necessary increment of power can be obtained from no other source than food. Despite his boasted wisdom, man has thus far failed to discover how to grow grapes of thorns or figs of thistles.

It must be admitted that the plan thus briefly outlined is lacking in novelty. The first two suggestions have already been put in practice to some extent in every intelligent community, thanks to a few sensible teachers of the art of cooking whose efforts in this direction have aroused no little interest in the work of improving the cuisine of the household. The importance of the movement can hardly be over-estimated, for upon its success the fate of coming generations largely depends. All honor to

the pioneers and leaders of this reform for their devotion to so worthy a cause. Nor can it be claimed that the third suggestion is entirely new. Nevertheless, the scarcity of good cooks and kitchens fully justifies the reminder of the sore needs thereof, and one striking feature of the application of the proposed plan deserves some attention.

The idea of adapting the food to the wants of the consumer's body is fairly well carried out at one period of life. When the infant shows signs of failing nutrition, the custom everywhere is to change the food immediately; and the suitable preparation, once found, is continued indefinitely,—no further experiment is made unless another emergency of the same sort arises. A proposition to return to the original diet while the organic functions of the babe are normally performed is instantly rejected as dangerous advice, and the counsellor regarded as a mere tyro in the arts of the nursery. Proper nourishment is universally recognized as the first and most important essential of the treatment of the malnutrition of infancy,—and this is as it should be.

Time passes. The babe thus carefully guarded outgrows swaddling-clothes and frocks, and, supposing the hypothetical youngster to be of the male sex, attains the dignity of knickerbockers, at which period his education begins. Confined in a poorly-ventilated room and subjected to no little mental strain, the blanched cheek, lack-lustre eye, and failing appetite and strength, which soon attract attention, are interpreted as evidence of impaired nutrition, for the common explanation is that "what he eats does him no good;" but the experience of his infantile days seems to have been forgotten, and the measures once immediately taken in a similar emergency are now neglected or ignored. The aid of the family physician is invoked, and under his treatment and regimen the usual measure of health is restored. Surely no further mistake will be made after so instructive an object lesson! The case is no sooner out of the doctor's hands, however, than the recently prescribed diet is discontinued, the child returns to the fare set before the rest of the family, all hearty and robust, and resumes the usual routine of study.

The same conditions of life that proved so detrimental before are reproduced, and the same result shortly follows. This time the old prescriptions are renewed by the accommodating druggist, the former diet is adopted, and the patient recovers only to undergo the same ordeal and meet with like disaster. The boy does not

appear to be diseased,—is simply considered as a weakling ; and, despite the increasing frequency and violence of his “bilious attacks,” professional advice is rarely sought. Imperfectly nourished, the child’s growth and development are equally incomplete, and marasmus, inanition, or some more specific malady, cuts him down at an early age. The sorrowing relations and friends, unable to understand why the loved one should be thus stricken, hasten to satisfy the curiosity of the community with the public statement that “physicians were in vain,” and endeavor to find some consolation in the expressed belief that the “affliction sore” was a “mysterious visitation of Providence.” Had the true relations of malnutrition and food been unknown, this assumption of ignorance would not be inexcusable ; but inasmuch as the lesson had been learned and successfully applied in more than one instance, the responsibility for the starvation that was virtually the cause of death cannot be so easily evaded.

Such cases are not rare. The number of children annually destroyed in this and similar ways is incalculable, and the list of those deprived of their rightful measure of health and vigor on arriving at adult age is quite as long, if not longer,—in either instance their name is legion. In view of the present downward tendency of the race, it is high time that the malnutrition directly or indirectly attributable to improper diet be taken from the catalogue of “mysterious visitations” and classed with typhoid fever, diphtheria, and other preventable diseases, where it belongs. Carelessly-selected, poorly-prepared food should be as rigidly excluded from the household as water contaminated with the cesspool’s overflow or sewer gas filtering into the house through the imperfections of the work, technically known as “skin plumbing.” In the vast majority of cases an attack of acute indigestion in the child reflects upon the caretaker in kind, if not in degree, as the wilful removal of the trap from the water-closet or the deliberate admixture of nauseating drugs with the food. The present condition of the digestive functions is such as to demand the most careful supervision of everything pertaining to their welfare. Neglect and ignorance are no longer excusable ! The formulation and general adoption of a plan, by means of which a process of improvement may be inaugurated, is imperative, and to this end has the problem of work been discussed.

Limited space permits the consideration of but one of the many obstacles apparently in the way of a general acceptance of

the plan proposed,—viz., a belief on the part of the public that the national dyspepsia is to be banished in another and far easier manner. The good results following the professional use of concentrated foods, in a certain class of cases, seem to have created a widely prevalent impression that all the nourishment of the future is to be of this nature. Indeed, the pseudo-scientist gravely informs us that the time is not far distant when the requisite amounts of carbon, nitrogen, and other elements daily destroyed in the production of the power expended by the worker, will be manufactured from inexpensive materials, thoroughly purified, and so combined and compressed that the family meal will become a mere matter of the distribution and ingestion of a few capsules or tablets, as the case may be. The synthetical chemist is to be the Moses who shall lead his people out of bondage to the cruel task-master dyspepsia into the promised land flowing with the milk and honey of the universal enjoyment of physical perfection; and in the dingy laboratory with its blackened chimney the enthusiast already professes to discern the potentialities of the pillar of fire by night and the cloud by day that shall guide the bilious and gouty wanderers to the wished-for haven, nourished during the march with manna from the same source.

Inestimable the blessings then to fall like showers upon the parched earth! The kitchen will be abolished, and with it shall disappear the housekeeper's trials and tribulations now originating therein. Much precious time will then be saved, all of which may be devoted to the chase of the nimble sixpence. The scientifically accurate methods of nourishing the body will soon cause every ill of a dyspeptic nature to vanish like mist before the sun of morn; and, best of all, the mental and moral perversities of weak human nature, irritated and driven almost to madness by the products of indigestion and attendant intestinal decomposition, will be totally annihilated. In short, the golden age of legendary lore is not only to return, but be revised and improved after the perfected models of latter-day advanced ideas.

That this belief should be sincerely entertained and win so many adherents in an age of culture and wide-spread diffusion of knowledge, is wellnigh incomprehensible. Human physiology has long been taught in the public schools, and the average individual prides himself upon his familiarity with its fundamental principles, expressing his opinions upon the various phases of the subject with the confident air of an expert. When a school-boy yet wrestling with "*amo, amas, amat*," he learned that the

integrity of every organ in his body is dependent upon its continuous functional activity ; that the blacksmith's much-admired biceps is the reward of uninterrupted use ; and that the injured arm, when freed from the splints long immobilizing it, falls helpless at the side, because of the degeneration of its muscular tissues consequent upon enforced rest. Had a practical application of this physiological knowledge been made, the chemically pure food plan of living would have been rejected at once. But there is no cry so seductive as "new lamps for old !" The dyspeptic, like the ancient Athenians, worships at the shrine of the unknown, and eagerly listens to any voice claiming to declare unto him the deity to whom the altar is erected. The doctrine in question is novel, and therefore attracts from the first ; and when, on examination, it is found to promise something for nothing, and a short and easy method of evading the just penalty of a lengthy list of dietetic sins of omission and commission, conversion is reasonably sure to follow. Who would not rejoice with joy unspeakable if enabled to have and enjoy the cake and penny too !

Fifteen years ago appendicitis was so rare that it was not considered of sufficient importance to deserve mention in any of the didactic lectures delivered before the students of the foremost medical school in the land, while to-day it is so common that the surgical expert counts his cases of the disease by the hundreds. There is but one rational explanation of this phenomenal increase. In man, the vermiform appendix, the body at fault, is apparently without function,—at all events, its removal at any age is followed by no symptoms to indicate that it possesses physiological value. The comparative anatomist tells us that it is the rudiment of a large and important structure in some of the lower animals which failed to disappear entirely during the process of the evolution of the higher type, as did the caudal appendage. Virtually a parasite of the colon, it depends for its nutrition more or less upon the parent organ, and so long as the bowel retains its vitality gives no trouble. But in the effort to compensate for the loss of digestive power, the worker has of late resorted more and more often to concentrated forms of foods, although long ago warned of the danger by the rapid progress of dental decay. In this way the amount of excrementitious matter to be voided at stool has been greatly lessened, and the work of the large intestine is now materially diminished. For this reason the latter organ has degenerated more or less, and to-day, not unfrequently, fails to

supply the useless appendix with nourishment sufficient to sustain its vitality, at which point it becomes gangrenous,—an attack of the dreaded appendicitis is the result.

If this theory be correct—and the evidence is all in its favor—the universal adoption of the plan that would enable the soldier to carry in his knapsack the rations for a whole campaign will soon be followed by not only an enormous increase in the frequency and virulence of appendicitis, but in all probability an equally serious change in the lower bowel as well; and only an early extirpation of the failing organs can prevent the total extinction of the race. Should humanity survive the trying surgical ordeal, however, it is fair to presume that in the course of time the operation in question would become unnecessary, for it is to be expected that æons of centuries would evolve a still higher type of man, *sans* teeth, *sans* colon, *sans* rectum, *sans* everything pertaining to the function now most objectionable to the æsthetic sense.

The lesson is obvious. Lost health, like the squandered fortune, cannot be restored save by unceasing effort and rigid economy. Food being the sole source of the worker's power, it is plain that prolonged indulgence in any form of diet that fails to completely nourish every part of the body and guarantee the integrity of its every function, must invariably result in disaster.

The whole matter may be summed up as follows: The raw material must be perfected and adapted to the special needs of each individual case, the day's programme so modified that no energy be wasted, and the process continued from generation to generation. When the worker's digestion shall have become sufficiently vigorous to enable him to perform the labor not only of the routine sort and amount, but that of prolonged periods of unusual muscular and mental strain, and easily and quickly recover the extra power drawn from the reserve fund and expended in discharging the most onerous and exacting duties of his lot,—then, and not until then, will the race be freed from the most potent of the evils that now threaten its physical well-being, if not its very existence. To regain the lost heights of nutritive perfection by following the path, the direction, and some of the difficulties of which it is the object of these articles to indicate, is the only true solution of the great problem of modern life. The problem of life is the problem of work!

The New Woman.

BY LAURA J. WILSON,

St. Paris, Ohio,

Teacher of Physical Culture and Superintendent W. C. T. U.



ALL have our ideas of the *new* woman. I believe the most popular *rôle* that comes to the brain when she is mentioned is a woman who wants to vote, pretends she would not marry (and I believe she is sincere, she only tolerates gentlemen *friends*), wears bloomers when she rides her wheel. With great wisdom she looks upon life as something that must be endured as a matter of course. Enjoys dove parties, would be a failure as a wife and mother. When this new woman comes to my mind I have creeping sensations. Sometimes I meet her, then my heart feels heavy. But there are, I am glad to say, different types of the creature.

So often, when the brain of woman is cultured, the heart withers. At the present day I believe woman to be passing through a great transition period, and she but wants to strike a happy medium, so blending her heart and brain that the more cultured the brain, the more tender the heart.

When I see women of forty summers who cannot appear sweet and gracious and always speaking in refined tones, I pronounce that woman a failure, be she of the old type or of the new. It takes control; of course, it takes control, but he that ruleth his tongue is greater than he that taketh a city. Let her be of any type or nation, this is the foundation on which to build.

While we gaze with wonder and admiration upon the fierce storms that sweep over the Atlantic, how much more genial is the warm, silent sunlight. Of the two, the latter is the greater force. A woman may be able to *lash* her husband to her, with apron strings, by these fierce spasmodic storms; but when death comes that husband will not gaze on the sweet patient face of sunshine nor feel that he has treasures in heaven.

At times there may be need of righteous indignation, but let it be given with love tones. They penetrate the heart. I never could find out my ideal new woman's political views, but it seems

to me, if she is a good mother, her sons will fight these battles for her.

She goes to college, but not to a lone female seminary, as if her brothers would suddenly annihilate her if found in the same class-room with them. She rides a wheel if she is strong, and it proves good for her, and, I think, yes, I am quite sure, no bloomers, but an ankle-length skirt. And she wants to marry, but she is not willing to take a dude, nor is she willing to wait till she is thirty, that she may go to a home filled with fine china and upholstered furniture. More culture is often found with common ingrain carpet and plain dishes, if the heart that washes the dishes is cultured. *All* women pretend they do not care to marry. On that point, and that alone, they are not quite honest, for it is pretension. The very newest and of the most pronounced type begin to change their ideas of single blessedness if the prince is persistent to the end. It is right for her to have a profession, but let her be a professional woman first of all, so if she ever gets tired of pretending she does not care to marry, she is fitted for a wife. I would rather she kept more to making cooking a fine art, and keep out of law,—medicine is wise enough.

Whenever people begin to reason and think for themselves, you may then be able to teach them a few ideas. The right kind of thinking does not cause the heart of woman to become less motherly.

To me the widest field for exercising her brain is the present condition of her own clothing. The present garments were never constructed on logical reasoning.

Union suits have become common, but most women wear corsets, and heavy skirts from the waist. When you sit down and study the subject, one is almost tempted to believe that Dame Fashion must be a half-sister to his satanic majesty. Millions of corsets are worn, and will be worn until we reach the point of clear reasoning. Then every corset will go up in flames.

The most sensitive place in a woman's body is the nerve-centre at the waist line, and the present heavy skirts cause it to hold many extra folds, which will cause it to become heated and irritated. Yet no amount of argument could convince a woman that the heavy skirts or corsets produce the weak and painful back.

The new woman must be free and at perfect ease every hour of her existence.

How much brain-work would Congress be capable of doing, if men wore such clothing? I deem it has been the wise act of Providence that these follies fell to the lot of women, for in time woman will disentangle herself, while, had they fallen on man, he would, without a doubt, have given one long deep groan and died in harness.

First the union suit, then the jersey tights, over them for drapery a long-waisted petticoat, the waist being six inches below the waist-line, thus keeping the nerve-centre free from extra heat. By a little head-work, any one is able to so adjust the skirt and waist of the dress that all the weight is from the shoulders. If we, as Americans, wish to produce a race worthy of the name, there must be reform in the dressing of girls and women.

You may not want to be the *new* woman, but by this corset-wearing and such heavy weights upon the waist, you are in a fair way to become the *old* woman, even in the prime of life.

The new woman with her dainty laces, her free invigorated body, always a high chest and full waist that assures plenty of lung-action.

Her face radiant with health. Bright with love for the one that is more than meat or drink to her. Kept a child until she is fully grown, then a wife before she has tired of her day-dreams.

At fifty, the meridian of life, she hears from the lips of her manly sons, "This is our mother who took such care of us in our tender years." To be worthy of this praise she has studied economic cooking, scientific house-keeping, child-life, and the great need of strong bodies.

To be brave, patient, and tender in sorrow, and acquire the art of seeing beauty and contentment wherever her lot may be cast. Worshipping the Creator that her soul may be a shining light, full of good works, and worthy of the rest beyond.

She Wanted Dirt Soap.


Druggist (glibly) — "Soap? Why, yes! This is the famous 'Zoo Zoo Soap, for Facial Faults,' and this is 'Korker's Komplexion Kream Soap;' here's 'Tolliver's Tar,' makes shampooing a luxury; 'Queen of Castile, for bath or toilet,' and——"

Mrs. Casey (interrupting).—"Hev yez anny that'll tek off the durt?"

Hygiene as a Remedy and Prophylactic for Disease.

BY JOHN C. McCANDLESS, M.D.,

Chicago.

HE fact that a majority of physicians cling to alcohol and other poisons may, in part, be accounted for in an ever-present desire to follow the example of our ancestors.

A short time ago I was conversing with a gentleman who attended Harvard University, and who was an admirer of the late Oliver Wendell Holmes,—evidently a believer of all Dr. Holmes ever said or did. He said Dr. Holmes held up a piece of rusty iron and exclaimed, that is the kind of iron is in our bodies, and a pail of hog's lard, that is the fat our bodies contain, and he believed it because Dr. Holmes said so.

A great number of diseases are due to retained excretions, a disordered stomach, and retained feces, and yet how few think of cleansing the stomach and bowels, but instead give calomel and other devitalizing substances which do injury in all cases in spite of assertions about medicinal dosage. Quantity does not alter quality, although crude observation has established the current belief that it does.

There are only a few men who do any thinking. The majority go to colleges to memorize some other person's belief. Little wonder that so many doctors are sceptical of medicine. The fact is, you cannot find a logical definition for medicine that will agree with the modern practice.

Foster's "Dictionary" gives it as "the science and art of preserving the health of the animal organism. . . ."

Is mercurial salivation preserving the health or the morphine fiend—on a par with any drunkard—evidence of the science and art?

You answer that the better class of physicians don't salivate or make morphine fiends,—at least that much is asserted, but this vaunted skill is like the drunkard's resistance to alcoholics when he first takes it at pleasure and lets alone at pleasure. But granting, for the sake of argument, that salivation and the morphine habit are the exception following the physician's prescrip-

tion, it is beyond all cavil and question a demonstrable fact that poisons destroy living matter when taken into the body in whatever quantity, even though it be coated and crossed with sugar. The microscope reveals the fact to us that even the higher potencies of homœopathic attenuation will destroy living matter. This is so with arsenic, strychnine, and all other poisons. Thus every dose of poisonous substance destroys living matter commensurate with quantity given.

A dose of morphine given to-day will destroy the nerve sensibility and leave an unnatural stupor, but the following day a little more is required, with the fallacious idea that the system is getting used to it. The living matter in the cell is diminishing all this time and formed material is taking its place. That is how the system is getting used to it. This method is followed by an interference in function, and the body is in a decidedly unhygienic condition or loaded with what is commonly known in medical parlance as morbid accumulation.

Perhaps you will say that clinical observation sustains the use of the afore-mentioned agents, but with equal rights we may as well assert that clinical experience and observation sustained Koch's lymph and Brown-Séquard's elixir or antitoxin, although it is about six months too soon to say this of antitoxin to have it received pleasantly.

Any poisonous substance or nostrum lowers the vitality and power of resistance to disease. You are then interested in knowing what I would do. It is not even necessary to touch *materia medica*. Hygiene and good nursing are a superior course to pursue.

Dr. Stedman, of the Boston City Hospital, 1882, gives statistics covering ten years in the treatment of typhoid fever patients as follows :

One thousand and forty-two treated by alcoholics gave 386 deaths ; 1042 treated by mineral acids gave 133 deaths ; 1042 treated with quinine and salicylic acid gave 119 deaths ; 1042 left to nature and good nursing gave 81 deaths.

Such clinical observation is a matter of daily occurrence. Why then clog the functions of the body with the morbid accumulations following alcoholics, mineral acids, etc. ? Is it because of a murderous intention or an inherited belief ?

Before going further, I would speak a few words concerning disease. Disease is a condition, and consists in an inability of one

or more organs of the body to perform their function properly. A sudden closing of the pores of the skin from cold or otherwise will be effectively relieved by the warm bath followed by a cold bath and friction.

A remedy is effected with less waste of energy in this way than any other, and no morbid accumulation is left to obstruct any other function. In this way hygiene is a prophylactic as well as a remedy.

If the stomach be disordered, subject it to the laws of hygiene.

A surgeon will scrub the surface or have it thoroughly cleansed before he cuts so that excrement or dirt may not get into the circulation ; but if he is asked to prescribe for a patient with a coated tongue and fetid breath he often adds insult to injury by a prescription of some disease-producing substance, and leaves nature go burdened, although the hydrargyri concreta may arouse nature, through irritation and poisonous effect, to cause it to throw the disordered accumulation and poison from the system—though not the injury done to the intestine—from the procedure referred to.

There is always a possibility of more serious sickness so long as the fetid accumulations are retained in the system. No person wants to eat and sleep beside an open cesspool, yet the human stomach, in some instances, is little better if we will accept what comes from it as evidence.

Be it said to the credit of a great many physicians who resort to lavage and similar procedures a great advance is made in this direction.

If we object to faulty sewerage and plumbing, we should guard against foul accretions in the stomach, as it comes nearer home than any other. Close attention to the bowels is just as important. Everybody should have at least one evacuation of the bowels daily. Retained excretions are in part absorbed, at least the liquid part, and a load of dejecta is carried around which clogs the energies.

The warm water enema with open air exercise will generally overcome constipation more successfully than a great many modern remedies, although constipation is due to a variety of causes.

Before passing from this part of the paper, I wish to call special attention to the feet. It may be claimed that the ancient custom of washing the feet frequently was more required owing

to the amount of walking and low sandals worn, permitting the feet to become soiled more readily, but to this I reply the hygienic influence of the air and sun was more enjoyed.

The excrement thrown off by perspiring feet and held in contact with the surface will bring the system under the susceptible influence of what is now a foreign substance.

Obstructions to the circulations at this point or extra work thrown upon the lymphatics is placing a strain on the system at the weakest point.

The hygienic rules laid down in the fifteenth chapter of Leviticus concerning the body for disease, and elsewhere concerning the dejecta in the wilderness, hold good in these days as fundamental principles of true medication, none more important, however, than the bathing the feet frequently. It is essential to bathe the feet more often than the face.

Headaches have been and are often relieved by bathing uncomfortable feet. This alone is argument enough for strict attention to the hygiene of the feet. I do not mean to say that bathing the feet often will relieve headache caused by constipation, but I do say the feet should be bathed every day, and I say this regardless of injury from uncomfortable shoes, etc. This is of still greater importance to persons with weak circulation, as the extremities suffer most when the circulation fails to control properly the tissues. Senile gangrene is an instance of this.

As a rule, we find a greater amount of excrement than on the same extent of surface on other parts of the body. It is of the utmost importance, then, that all offensive excrement be separated from the healthy tissue. We should not forget that the same blood supplies the feet as other parts of the body.

The practical application of hygiene is one of the greatest blessings of our civilization, and has prevented more disease than is given credit to.

It is the people who live in filth that suffer from contagious disease; but here, again, I include the whole alimentary canal from mouth to anus, as well as the external surroundings, and will assert, fearless of successful contradiction, that to find a case of diphtheria in a patient who, previous to the attack, had a strong vital effort with throat, stomach, and bowels in a hygienic condition would be a very rare exception, and yet I know that this view is not generally acquiesced in.

One thing we know, and it will be conceded by most all, that

the libertine escapes specific disease by strict attention to hygiene, and when hygiene is properly observed in every-day life many forms of disease now prevalent will be hard to find.

Some of our most noted men find an efficient remedy in hygiene, not only for diphtheria, but typhoid, and also all infectious diseases.

Kalasknikoff, a noted Russian author, asserts that he has better results with hygiene than the so-called specific treatment in specific disease.

Doctors who use the hygienic and antiseptic treatment in diphtheria have no such mortality as others who tinker with pencils of silver nitrate, gargles, antitoxin, etc.

Statistics, gathered from those who have made hygiene the basis for treatment, is evidence in favor of this form of treatment.

We find disease in its worse form in the filthy-kept homes, among the poor and debilitated, and here I have applied the hygienic treatment in diphtheria after the larynx had become so seriously involved as to demand speedy relief or death by asphyxia, —dyspnœa being present to a marked degree. Accompanying the aforementioned conditions, the patient unable to swallow water, also the Eustachian tubes involved so as to destroy hearing. In such cases tracheotomy is resorted to as a rule, and to this procedure the writer offers no objections, but when harmless remedies in conjunction with a hygienic course effects the desired result, I prefer to follow it.

Reputable physicians who have pursued a similar course during a lifetime of practice give statistics of uncomplicated cases with no mortality, and no mortality has followed my practice with diphtheria so far. Possibly my statement will be discredited, but no one has a right to do so until he has tried the method to which I refer.

How can "antitoxin" be a remedy for diphtheria? Being a dangerous poison, it must needs reduce the resistive powers of the body as soon as brought in contact with the healthy tissue. The diphtheritic membrane is a wise provision of nature, excluding septic matter from the general circulation.

Is there any wisdom, then, in reducing vitality with antitoxin, and thereby produce a more extensive and favorable soil for the disease-germs and putrefaction?

Is there logic in the theory of such a procedure?

If so, disease, then, must be considered in Chinese pathology, and exorcism will have equal rights as a remedy.

Statistics were furnished to show that Koch's lymph cured the consumptive, and it is as little as we can expect that the death-rate would be discounted by antitoxin. Any not very skilful person, laboring with the imagination and other slight inflammations in the region of the œsophagus, can build up statistics for the sale of their wares, while the laity are permitted a similar position to the curious person on the corner gaping at the street fakir. The most reputable physicians in the world do not believe in making disease to cure disease, hence allopathy is repudiated; but why give toxic horse-serum, and there can be no doubt but it is disease-producing.

The Klebs-Lœffler bacillus must be a lower organism than bioplasm, consequently, the bacillus will not suffer first. If vitality is strong, no doubt the irritation of the so-called remedy arouses nature to throw out both the disease and antitoxin in some instances, but in such cases nature is better able to do so without antitoxin.

The vaccination advocates lay claim to the abatement of small-pox as due to the cow-pox pus inoculation, but such claims lack proof, legal or otherwise. Like Americus Vespucci, having America named after him, credit is given where it does not belong. It is an evil in homœopathic quantity, and while crude observation has not detected any injury following this so-called vaccination process in robust children and adults, yet this is no argument in its favor. Where robust children and adults properly observe hygiene, small-pox need not be feared, and never has claimed victims under the aforementioned conditions.

There is as much philosophy in inoculating people with cow-pox virus to ward off small-pox as there would be in following the example of the ancient heathen cutting themselves with knives, and following with the infuriated cry, "O Baal, hear us."

The frequency demanded of this flaying process and the number of scars required will yet be reflected upon with the most profound regret by every thoughtful student of the healing art.

There are other considerations and others to be considered besides the healthy. "They that be whole need not a physician, but they that are sick;" although it is the custom in some heathen countries to pay the physician so long as they enjoy health.

There can be no consolation in the doctrine of the survival of the fittest to those who have brought premature death to many thousands by this unwarranted procedure.

It is the veriest rot to talk of pure or impure virus. A similar comparison would be a wicked and righteous devil, and it would not be the least surprising, if the latter were well launched by a government-fed subject, that it would have advocates enough.

The ablest microscopists are unable to certify to the purity or impurity of vaccine virus.

The eminent professor A. M. Ross, M.D., M.A., F.R.S.L., F.R.C.I., England, etc., says, "That he knows that hundreds of children were vaccinated into small-pox, and died from it during the epidemic of 1885 in Montreal." Continuing, he says, "All the protection we have against small-pox or other filth diseases comes from our improved knowledge of hygiene and sanitation, and if one-quarter of the money now spent for vaccination was applied to improving the condition of life in localities where small-pox, and other filth diseases originate, we should not only stamp out small-pox, but cholera, diphtheria, measles, scarlatina, and other diseases that are born in filth and thrive upon filth.

"Cleanliness is the only natural, hence scientific, protection, not vaccination, incantation charms, witchcraft, or any other fetich."

The many children killed by vaccination possibly were prevented from having the small-pox, although some of this number carried strong presumptive evidence of this disease to an early grave, and those who survive carry the mark of the beast, at least the beast's pock-mark.

We have reason to be thankful that the Supreme Court has branded compulsory vaccination as illegal, and given damages against a health board for the same. (*Emil Schaefer vs. The Health Board of Boston.*)

Such decisions cannot be very pleasant recollections to these advocates of this unscientific practice.

Hygiene and sanitation are scientific preventives of disease. Friendly to the physician's effort as well as the surgeon, and to those who will take pains to investigate, they can realize the most sanguine anticipations.

The Great Restorer.

BY G. W. FUREY, M.D.,

Sunbury, Pa.



ALL history does not record the beginning of search for the Philosopher's stone. The line tracery on the page of antiquity blends with extinctions of race and types in affirmation of the story of the ever-present desire of man for the balms and elixirs of his times ; while the appetites, the passions, and the depravities of to-day are those of the yesterdays of all other ages. There should be little surprise, then, that any particular class of the searchers after the mystic alchemy should be the one to develop the highest attainments, by happily striking some accidental unison chord among the medley of intonations, or that our present lesson should come to us by the courtesy of the poet whose careless musings were the first to tell us that "Sleep is Nature's sweet restorer." We physicians, in the sense of scientific seekers after the peculiar stone some wafting fancy or beetling fate has set us in search of, dividing our noble profession, as we do, up into the numerous specialties, are accustomed to bend our steps towards the more prosaic regions where phlogistic entities and the grosser elements do abound ; but at this time we are constrained to follow the lead of the kindly poet, and to reach out after the sources of his inspiration. Sleep has never been labelled by the sages among their exhibits. From the babblings of our friend the poet, describing it as a sweet restorer, to the latest dissertation informing us that it is only a prosy disconnection of intercourse between the cerebral hemispheres, due to a moderate and temporary "grounding" of the wires of the commissures in the abyss of the unknown, there is a silence as barren as that which comes to us from either sage or poet. Out of the common heritage—out of this unfathomed deep—we, then, have a right to dip of the mists that cling, and to see if, by taking up the strangely-begotten axiom of the poet, it may be given some practical if not therapeutical form. Having upon so many fields of venture learned the reliance to be placed in the steady hand of *vis medicatrix naturæ*, we can well afford to stop for a time in our

routine of piracies from our other friends, the authors, and inquire as to any possible application we may make of this restorer, which is ours by right of "unintentional discovery." If there is to-day any respectable *rationale* of sleep, it has escaped every endeavor to find its whereabouts. If sleep is a suspension of function alone, or of animation partly, either of the physical or of the psychical, or of both, no man dare affirm. This uncertainty furnishes the excuse for the few modest investigations we may be able to follow.

Then, first, What is sleep? What happens when we sleep? What is its *modus operandi*? What is that general condition of repose that is also a general restorer of the mind and body from the effects of fatigue? Observing the regularity of the occurrence of sleep throughout all the animal kingdom, and of its counterpart, if not equivalent, in the vegetable world, we reasonably suspect some underlying principle which may prevail as a universal factor in its control, if not, possibly, of its production.

If we can thus in a manner establish such principle, may we not, in a limited way, of course, still with reasonable hope, apply it in controlling, soothing, and *restoring* many of the local exhaustions of function and of organ?

We have long observed that there can be no natural sleep so long as there is any considerable contraction of the voluntary muscles of the body. We go further, and say that almost complete relaxation of the muscles is necessary to the production of sleep. We no longer have to stop to argue that there is actual diminution of blood in the brain during sleep; to which we may add another fact, not so commonly borne in mind, that during general relaxation of the muscles there is excess of blood of the venous circulation of the trunk and extremities. This would make it seem possible that the slowing of the venous current suppresses or suspends the activities of the nervous centres sufficiently to *admit of* sleep, which it may do by contributing to the depletion of blood at the brain.

Here are a few reasons for the belief: The propelling force exerted upon the venous blood by the heart's contraction, as well by that of the arteries, is at most merely nominal, owing to the intervention of the capillary system of vessels, against which it is expended. However, as the blood must move onward, some other agency is essential to its propulsion, and so we have it presented to us in the preceding suggestion,—muscular contraction.

That this point may be fairly understood, let us follow the return flow of the blood that has once passed through the capillaries into the fimbriæ of the veins. The heart's impulse expended, the law of gravity only operating in a minor part, and that of capillary attraction of no consideration, we will easily see that as contraction of the more distal of the muscles takes place, another impetus is substituted, and that the portion of the venous column lying between and beneath these muscles moves onward with a volume and rhythm which correspond to the activity of that contraction. Such contraction may be so nearly imperceptible as to assume a mere segmentary or sectional rigidity, and as segment after segment exerts its pressure, onward goes the column in succession, until it has, by the final acts of the abdominal and pulmonary efforts, become again the arterial current of the left side of the heart.

Without entering into an inquiry about the ultimate molecular phenomena, without trying to probe into that mysterious abridgment of brain function that is as unknown as is its psychical properties, we *may* enter into speculation as to whether the determination of blood to the organs of digestion after eating accounts for one's disposition to take an after-dinner nap, and we may ask the question, if a light supper contributes to one's untroubled slumber.

Observe one who is dropping off to sleep in his chair; he gradually settles down into limber aggregation, and, when his chin at last rests upon his peaceful breast, and the book he had been reading slips from his lapsing grasp to the floor, will he be for the first time asleep. He starts up awake, however, because the noise made by the fallen book excites, through the auditory sensorium, nerve centres in control of enough muscular activity to pump blood to the cerebrum. The act of gaping thus becomes a real automatic governor to restore waning energy and wakefulness, which it does by directing the equilibrium of the blood-currents. Notice old Rover and Tabby the next time they awaken from sleep. The first thing they will do when they rise to their feet will be to open their mouths, put out their tongues, and stretch their bodies to the fullest extent. When this has been done they are prepared for the next act of their lives, for they are awake again.

We do not find that sleep is as much of an involuntary process in many respects as a casual attention to the subject has

often led us to assume. If you are drowsy as you sit reading, just take a stretch, or, better, get up and walk across the room, and you are immediately aroused. You have simply pumped sufficient blood from its static condition in the veins of the body and limbs to the cerebro-spinal centres.

The next to impossibility to keep still, even when propped and bolstered up by the photographer, is another fair instance of the continuous demand the brain makes upon the muscles to supply its nutrition.

No prisoner immersed to his neck in the pumping torture ever found it more necessary to "pump or drown" than does every member of the animal kingdom. Not only do the walls of the heart and chest find it necessary to keep vigorously at work, but so do all the muscles of the body.

When it was said, "Earn thy bread by the sweat of thy brow," it was implied that we must also maintain our health, and in fact, as we have seen, our very lives as well.

The gestures of oratory as well as the clinched fist, and various contortions that go to make accompaniment of forced and violent intellection, do so in a more physiological sense than we had supposed.

In that dread condition called nightmare, the most natural, in fact, the instinctive, effort of an almost overpowered will is often only directed to the movement of enough muscular fibres to crook the little finger. We are really only sound asleep in proportion as the muscles of the extremities and of the abdomen become extensively relaxed, respiration during sleep being almost entirely thoracic. This brings us to face two propositions,—to wit :

First. During rest of the brain, or other organ or viscera of the body, there is temporary depletion of the blood supplied to such part ; and it is during such time of rest that tissue-respiration is rendered most favorable to the repair of waste tissues.

Second. Certain parts of the body may be made to act as reservoirs wherein the blood may be withheld, or even withdrawn, from other parts, while one set of tissues, or one whole organ, may be made to do the work of another.

Here we may stop for an application of our lesson in some practical way to the treatment of disease, the prevention of disease, and the extension of many of the comforts of life. There seem to be so many every-day cases coming to our notice that

our so-called medicines and palliatives do not affect, that very slight promises offered by other means and measures ought to receive close attention. With most of our specific disorders self-limited, and many of the organic diseases, when once fully established, found to be beyond repair, let us stop to see in what way sleep may be controlled and pressed into service.

There is no question of more imminence to-day than that of natural sleep and its relations to health. Men—and by that is included representative men—driven to despair by neurasthenic conditions, in which insomnia is a prominent factor, are committing suicide every day, while hypnotics and anodynes are being multiplied without number. We hear on every hand of the “fastness” of the life we lead. The truth is, that the average American, in all the term implies, leads just the reverse—a sedentary life—so far as real mechanical living is concerned.

Is it any wonder that he is given up to despair at the intolerable misery and distress, and finds no balm in any of the everyday decoctions and potions of his times? Think of him, our boasted American citizen, as you know him! All through the winter months you see him sitting, sitting, sitting, bent over his desk, his books, his business, bunching his abdominal muscles and interfering with their legitimate massage of the abdominal viscera, removing nature's support from the peristaltic action of the bowels, thus contributing to a sluggish hepatic circulation. If he has more than a square to walk, he goes from and to his home on a car. “Walking is too slow, you know.” He spends his working hours cramped up in this unhealthy position, in which there is practically no muscular energy put forth for “pumping” purposes but that which the chest is compelled to do. When evening comes, and he does go out in society, his vitality is so enfeebled by the disadvantages he has met with during the day that he has no desire for dancing or other amusement, and so he passes even his pleasure hours as well “sitting, sitting, sitting,” tucked away in some nook of the parlor, where we still find him “pumping” with his chest.

On goes the winter, and forth comes the spring. Out of his shell, as it were, he steps to try some of its proverbial balminess. But his thoracic viscera and apparatus, owing to the long and unnatural labor they have undergone, have not the tone and vitality to endure that which belongs to health, and at the first unguarded moment, with its chilling blast, on comes the consequent

attack of pneumonia, or the awakening of some latent disease that is even worse.

We are told that the lassitude that attends the school-room and the counting-room is the result of bad ventilation. The truth is, that modern buildings, lighted and heated as they are, are generally well ventilated. All that is needed in the school-room is to interpose, with the other duties, proper athletic exercises. All that is needed in the counting-room and office is an occasional short walk, supplemented by methodical gymnastics every day in the open air,—of which walking is the best, the natural one.

In our waking hours let us be aware of the whole duty of the whole mechanism of the circulatory system, distributing to it, as a whole, the work nature designed for it; then, when the day's work is done, and we retire for the night's rest, we may cuddle up into some agreeable and cosey position, compose our troubled thoughts, allow the work-a-day blood of the tired brain to settle back into the receptacles awaiting for it in the veins of distant parts, and let the tender arms of Morpheus fold us in the downy robe of oblivion called "Nature's sweet restorer."

If we can in this simple way use our knowledge of sleep in so broad and general a sense, of course we will not search long for fields in which to multiply its applications in manners more specific.

If we have brain or spinal trouble, due to injury, alcoholism, or la grippe, call off the incessant pounding influence of an excited circulation by some kindly posture of the body, allowing these delicate centres to be thus relieved of dangerous quantities of blood by its accumulation within the veins of the extremities.

In many troubles of the heart and lungs, and of the several linings of each, we may often limit the frictional conditions, and in that way much of the attending pain and irritation, by strapping the chest thoroughly and causing the respiratory movements to be abdominal. Whenever one organ is the seat of disease, it demands the opportunity to recover under conditions when there is as little turgescence as possible, and if we can in any way economize its energy of function or waste of tissue by using any of the other organs to do its work, we will have done so on the principle that gives the mind sleep.

Thus, when a lung is struggling to do the work of two while its mate is silent with the dulness of pneumonia, let us call in

the neighbors,—the kidneys, skin, and bowels,—that they may do as much of its elimination work as possible. In a given case, where an excited muscular system and an excited brain act and react upon each other in that compound manner known as delirium, if we consult the natural laws of natural sleep we may utilize them by producing a quiet that shall be mutual.

Soothe the sensorium not only by preventing strange noises, sights, and odors to annoy, but be patient and delicate in every opportunity to please. Please the appetite, assuage the thirst, and smooth the pillow,—even the turning of which makes it strangely fresher and softer.

So it will be with our friend who has a white swelling of his joint. Place the joint within the comfort of a plaster cast ; keep the part quiet, as the sleeping brain is kept quiet, by the agency of other regions of the body, helping the cast and proper bandaging to rid it of surplusage of blood, and it will soon get well.

As we meet more and more with the scientific tendencies of the times, and as they bring to us the lessons of experience coming to us from the broad fields of our own and the observation of others, we will be continuously impressed by the fact that mankind is in possession of *remedies* as well as *medicines*, not the least of which is "Nature's sweet restorer."

Military Hygiene.¹

BY MAJOR CHARLES SMART,

Surgeon U. S. A., Army Medical School, Washington, D. C.



HYGEIA was the goddess of health, the daughter of Æsculapius. Hygiene is the science of health. It was called by Professor Parkes the art of preserving health ; but since he wrote the introduction to his classical work hygiene has been developed by study and observation into a science, and its art or the practical application of its laws has received the name of sanitation. We are here to study the science and its practical applications, not only that we may protect the soldiers of the United States from the

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attacks of disease, but that we may preserve their physical powers at their maximum at vigor.

The duties of an army surgeon are various. They require him to be a many-sided specialist. When a soldier becomes sick, the army medical officer has to treat him as his attending physician ; when accidents or injuries occur, he has to be prepared for the emergency as operative surgeon, but at all times he has to watch over the health and strength of the command as its sanitary or health officer. In this last respect his duties do not differ materially from those of the health commissioner of a municipality. The health officer of a city has to guard the community against the introduction of infectious diseases by a system of quarantine or of careful inspection. If any infectious disease, such as small-pox, scarlet fever, measles, diphtheria, cholera, or yellow fever, should make its appearance in the city, notwithstanding his precautions, he must endeavor to prevent its spread by isolation, disinfection, and other special means, meanwhile determining, if possible, its derivation and the measures to be adopted to prevent the occurrence of other cases from the same source. He has likewise to guard the city against any outbreak of disease from local insanitary conditions, or, in other words, to see that all nuisances are abated. He has to look after the wholesomeness of meat, milk, and vegetables, and the condition as to purity or adulteration of various articles of food. He has to keep guard over the water-supply, whether general from the city reservoir or local from wells or springs, and to provide for the satisfactory removal of offal, garbage, waste water and night-soil. Lastly, he is responsible for the accuracy of the vital statistics of the community. To enable him to perform these various duties he has the assistance of a staff of expert employés, including sanitary, police, and plumbing inspectors, bacteriologists, analysts, and statisticians.

The army medical officer has similar responsibilities, but he has no such staff ; he must be prepared to undertake by himself any or all of these duties as the occasion may require. Hence the necessity on his part for a more intimate knowledge of the methods of practical hygiene than is usually conveyed in the curriculum of a medical college.

It is only in recent years that the status of the army medical officer as a health officer has been officially recognized. It is true that in the early years of the republic he was charged by the

Regulations to do everything in his power to eradicate contagion ; but this meant only contagion in the hospitals, the contagion of hospital gangrene and of the deadly typhus fever, and gave him no power over the general well-being of the troops. The Regulations of 1828 provided that when troops were in quarters the surgeon should from time to time inspect the rooms and kitchens, the quality and preparation of the food, and the location and condition of the vaults, reporting defects and suggesting improvements to the commanding officer, who was thereupon directed to take such action as seemed to him necessary and proper. The surgeons did this honestly and faithfully, inspecting and recommending until they became tired of making recommendations that were never carried into effect, for the commanding officers of those days seldom considered it needful or proper to take any action, but instead often regarded the medical officer as officious and meddlesome, and his report and recommendations as reflections on their administration. For many years the Regulation was therefore a dead letter ; but in progress of time the popularization of sanitary science became such that military commanders began to have a better appreciation of sanitary recommendations, and as a result we have now vastly improved conditions and lessened rates of sickness and mortality. At the present time most military officers are as interested in the sanitary condition of their men as are the medical officers themselves.

I have told you that the duties of the military health officer do not differ materially from those of the civilian officer ; they are both based on the same principles. It may be well, therefore, to outline briefly some of the salient features in the history of hygiene that you may the better appreciate the value of sanitation in improving the condition of the human race. Ordinarily medical men in dealing with medical history drop back to Hippocrates, the father of medicine, who lived in the fifth century before Christ ; but hygiene was known and hygienic rules followed long before his time. Among the Greeks the very name *hygeia* suggests its existence as far back as the mythical time of Homer's Iliad ; while about the same time in the wilderness of Southern Syria the leader of the Israelites elaborated a system of sanitary rules for the protection of the nation which he had formed out of the Egyptian bondsmen. In doing this, however, it is probable that he gathered up into one system of sanitary

law all the knowledge of the subject then possessed by the priests and learned men of the Egyptians. He insisted on cleanliness, the isolation of the sick, and care in the selection of articles of diet; and in carrying into effect these rules, which was scrupulously done by the Jews in after ages, they oftentimes protected themselves from epidemics of disease which scourged their Christian neighbors.

It is, however, to Hippocrates that the credit is usually given of having been the first teacher of hygiene. He had established a sanitarium and college of medicine at the springs on the Island of Kos in the *Ægean* Sea; and his name and reputation were known throughout the whole of the civilized world,—that is, throughout the Grecian peninsula and in the settlements on the shores of the Mediterranean. It is related that Pericles sent for him to come and save the city when the plague was devastating Athens and threatening the extinction of the people. He went, and found magnificent dwellings and luxurious interiors, but the city as a whole saturated with filth. He began his work of sanitation by draining and cleaning up, and endeavored to protect against seizure by keeping large bonfires, to which aromatics had been added, burning in the streets; thus recognizing, not an infection which he was destroying, but an unusual and harmful constitution of the atmosphere which he was endeavoring to alter. This epidemic constitution of the atmosphere in explanation of the existence of epidemic disease has survived almost to the present day, lingering longest in connection with influenza, but the progress of bacteriology may be said to have now laid it to rest. On his return to Kos he wrote his book on “Air, Water, and Places,” which is regarded as the first work written on the subject of hygiene.

Rome received her instruction in medicine from Greek physicians; but she appears to have elaborated her own system of sanitation, for the great sewer of the Tarquins, which to-day helps to carry off the waste water of the city, was built 140 years before Hippocrates was born. It opens into the Tiber by an arch twelve feet high, surrounded by three tiers of *voussoirs*. Three hundred years later the Appian Way was commenced, and the first water from a distance was brought into the city by the Censor Appius Claudius Cæcus. In another 300 years, or in the time of Augustus, the aqueducts bringing water from the Sabine hills were 270 miles long, thirty miles crossing the *campagna* on

lofty arches. The *campagna* at that time was covered with villas and country seats; malaria was unknown, for drainage and cultivation kept it in good sanitary condition. Every care was taken of the health of the people and of the sanitation of the imperial city. Later, hygiene degenerated into luxury, which has left a record in the ruins of the public baths. The colonnade surrounding the *Thermæ* of Caracallus was a mile long, and enclosed trees, flowers, lawns, and a stadium for the exercise recommended to be taken after the bath; but if one were lazy, the halls, theatre, museum, library, etc., within the building afforded other means of enjoyment. At the present day the remains of this structure are, after the Colosseum, the grandest ruins in Rome.

In progress of time the civilization of the Roman empire was swept away by the inroads of the northern barbarians. Alaric, of the Visigoths, captured Rome early in the fifth century, and Genseric towards the middle of that century completed its destruction. The dark ages descended upon Europe, and nearly a thousand years elapsed before the dawn of our modern civilization began to illumine the mental atmosphere of the Aryan race.

Two diseases which affected humanity from the earliest periods of recorded history had much influence in stimulating a practical interest in preventive medicine. To leprosy we owe our present hospital systems, and to the plague our system of quarantine and maritime sanitation.

Leprosy was common among the Israelites throughout their history. They brought the disease with them from Egypt, and from the Egyptians also Moses no doubt obtained his rules for diagnosis and for the segregation of the lepers without the camp, as given in Chapter XII of Leviticus. General Lew Wallace, in his novel, "*Ben Hur*," gives a realistic picture of the life of those affected with leprosy at the beginning of the Christian era. Leprosy was introduced into Greece and Rome in the first century by troops returning from Syria, and thence it spread slowly, almost imperceptibly, to the colonies in France, Spain, and Britain. A thousand years later it was epidemic in Europe, and continued so for many hundred years; even royalty was not exempt from its infection. Every town of any size had its hospitals for the isolation of the lepers. There were 95 in England, and no less than 2000 in France, and the laws regulating them and their inmates

were strictly enforced. These undoubtedly contributed much to the suppression of the disease. A few survivals of its existence continue in Europe, notably Norway. Its prevalence continues in Asia and many other parts of the world, particularly in the West Indies; in the Hawaiian Islands 2 per cent. of the natives are said to be affected.

The nature of the plagues of ancient history is uncertain. Besides that which we now recognize as plague, they probably included all fulminant febrile infections. We do not know the nature of the plague of Athens in the time of Pericles, nor of that which devastated Rome thirty years earlier, and which, according to Livy, destroyed most of the slaves, one-half of the citizens, many senators, priests, tribunes, and two successive consuls. Bubonic plague was described as a foreign disease by the earlier Roman writers. Europe did not become invaded until the reign of Justinian, A.D. 542, when it entered Constantinople from Asia Minor. After this there were repeated reintroductions or epidemics developed from sporadic cases. A great wave started at Genoa in 1346, and continued with periodic exacerbations for twenty years, during which 25,000,000 people were destroyed. At this time contagion was noted as a factor in its spread, and Boccaccio tells us of the efforts made to preserve Florence by excluding the disease. Sanitary cordons, the equivalent of what in our day we call "shot-gun quarantines," were drawn around healthy places to preserve them, and around infected places to prevent the spread of the pestilence. Venice at this time was the commercial metropolis of the world. Her vessels brought home the products of the East, and occasionally among them cases of the Oriental plague. In 1423 she built a lazaretto for infected sailors, but not until 1484 were laws enacted for the detention of vessels from infected ports prior to permitting the admission of the crew, passengers, or cargo. The city of London suffered, as did all the other European cities. Sporadic cases were noted every year, and occasionally the disease spread with epidemic violence. In 1665 the city had been comparatively exempt for seventeen years; but in the summer of this year 70,000 persons died out of a population of less than half a million, two-thirds of whom had fled into the country. The great fire occurred next year; and the subsequent freedom from plague was attributed by many to this purification by fire and the subsequent rebuilding of the city on better sanitary plans; but about the same time the disease began

to subside all over Europe. Continental cities ascribed their protection to strict quarantine, but England did not institute quarantine until 1720, when a deadly epidemic in Marseilles threatened the whole of Europe. The progress of civilization, of which sanitation is a part, has banished plague, and it is now found only in the country south of the Caspian Sea and in certain of the seaports in China. It ravaged Canton and Hong-Kong in 1894.

The discovery of the protective value of vaccination was the first grand step made by preventive medicine after the modern revival of learning. On May 14, 1796, Dr. Edward Jenner, of Berkeley, England, vaccinated a boy from the sore on a milkmaid's finger, and on July 1, following, inoculated him with small-pox. The protective influence proved by this experiment took the mortal sting from a disease which for ages had more than decimated the human race. It has been estimated that prior to this discovery one-sixth of those born fell victims to small-pox, and of those who survived many were deaf, blind, and disfigured. The small-pox-pitted face, so common in the early days of this century, is now a rarity among civilized nations.

The study of typhus fever in prisons, ships, camps, and the crowded slums of large cities, demonstrated the existence of a contagion or pathogenic influence which appeared to be called into being under conditions of over-crowding and insufficiency of fresh air, and led to an appreciation of the value of air-space and ventilation as sanitary factors in dwellings. The advantages derived from the practical application of this knowledge were the suppression of typhus fever and hospital gangrene, and the lessened prevalence of consumption and of those cachectic conditions that originate in ochlesis or crowd-poisoning.

Its further study, leading to the distinction between typhoid and typhus fevers, had also important sanitary bearings, for it ultimately showed that the germ of the former disease was to be found in the excreta. For a time exhalations from these were regarded as containing the infective material. The sewers of a city containing typhoid fever patients were, in the language of Dr. William Budd, "a continuation of the diseased intestines." Sewer air had, therefore, to be kept from our houses, and to this effort to protect us from typhoid exhalations, we are indebted for many improvements in sewage systems and house plumbing. Later, when the propagation of the disease by water was discov-

ered, the attention of practical sanitarians became directed to the protection and purification of water-supplies, an agitation which is still in progress.

I have said that the plague gave us our quarantines for protection against exotic diseases. It is, however, to cholera and yellow fever that we owe the improved quarantine methods of the present day. Cholera made its first progress over Europe in 1830; and in its periodic visitations since that time it has always come from India, and generally by way of the Red Sea. The annual pilgrimage to Mecca brought cholera as well as pilgrims to the holy city of the Mohammedans, and pilgrims from Europe carried the infection with them on their homeward journey.

International conferences were called at various times to consider the best system of protection. The most important of these was that of Constantinople in 1866, which established a quarantine under international auspices in the Red Sea to intercept infected vessels and prevent Mecca from becoming a great distributing centre. This did much to restrain the advance of the disease and to relieve the local quarantines in the Mediterranean. Later conferences, as at Vienna in 1874 and at Rome in 1885, did much to lessen the cruelties of a prolonged quarantine by recognizing the English view,—that importation of the germ was of less material consequence than local filth and insanitary conditions in the invaded seaport. Local sanitation then became the order of the day, with medical inspection of incoming vessels to determine the presence or absence of disease, giving free pratique if no case had occurred on the ship and if seven days had elapsed since leaving the port of departure; but if the ship was infected provision was made for the removal of her sick, the retention under observation of those who apparently were well, and the disinfection of the vessel and her cargo.

Yellow fever gave us a similar quarantine or sanitary service in the United States. The belief that yellow fever was indigenous in this country rendered our quarantines valueless for many years. Since the War of the Rebellion, however, the disease has been regarded as an exotic, and since the wide-spread epidemic of 1878-79 it has been excluded from the country by an inspection service to determine the condition of the vessel, the detention of infected persons, and the disinfection of infected ships.

The registration of vital statistics and the institution of boards of health were two most important agencies in the modern

progress of practical hygiene. The record of births, marriages, and deaths was made at first for legal purposes only. It was not until 1839, when Dr. William Farr prepared the first annual report of the registrar-general of England, that the value of vital statistics in directing the work of sanitation became demonstrated. The mortality returns were the most important in this respect. They showed the excessive number of deaths among children under five years of age; the high death-rate in cities as compared with the rural districts, and in certain parts of a city as compared with certain other parts of it; the high death-rate among persons engaged in certain trades, and the high rates occasioned at times by certain diseases. All these facts led to observation and study for their explanation, and these again suggested hygienic measures to remedy the insanitary conditions that were discovered. England has the most efficient system of registration. The local registrars report weekly to the head-quarters in London, and from the office of the registrar-general are issued weekly, monthly, quarterly, and annual reports. The registrars-general in Edinburgh and Dublin publish similar reports for Scotland and Ireland respectively. In the United States many cities and a few of the States have excellent systems, but taken as a whole this country is far behind in the registration of vital statistics. Not so, however, the United States army; for the army medical officer reports all cases of sickness as well as deaths, and this it is which gives so much value to the statistical reports of the surgeon-general. An excess of sickness over the average of the army at any one post can be detected immediately, and the character of the reported cases generally gives some indication of the nature of the necessary preventive measures.

Boards of health, or local sanitary authorities, were a result of the inquiry into the causes of excessive death-rates as developed by the registration returns. Their duty was to lessen such rates by preventing or removing the insanitary conditions that gave rise to disease or promoted its spread. In this country boards were first appointed in our large and growing cities. Much good was accomplished by them within their jurisdiction; but it speedily became evident that for efficient work there must be such a co-operation among the local officials as could only be effected by the intervention of the State. After a time State boards of health began to be organized by various legislatures; and it is to be observed that much of this work of organization was carried

out by medical men who had served during the War of the Rebellion. Their duties and experience as army medical officers had impressed upon them the value of preventive measures and each, having influence in his own State, became an important agent in promoting the progress of public sanitation. Derby in Massachusetts, Rauch in Illinois, Hewett in Minnesota, Baker in Michigan, and many other pioneers of State medicine in this country were volunteer medical officers during the war.

Many of the annual reports of municipal boards contain valuable papers in the form of reports of committees on the local water-supply, drainage, sewerage, etc., and on the measures adopted for the suppression of epidemic diseases. The reports of the State boards also are mines of sanitary information.

But you will readily understand that just as there are subjects of sanitary import that exceed the jurisdiction of a municipality and require the intervention of State authority, so there are subjects so extensive as to reach beyond the lines of a particular State, although of the greatest importance to the well-being of the people of that State. One which is calling for federal legislation at the present time is the prevention of the pollution of rivers and other natural sources of water-supply, the people of one State who drink the water having no authority over the sewage disposal of cities in an adjoining State by which it is contaminated. To preserve the people of the whole country from insanitary conditions, a perfect co-operation is needful among State and local authorities. A good understanding prevails among medical and sanitary authorities, but these are too often powerless to accomplish the end in view. Municipal authorities and State legislation view the sanitary proposition from the financial stand-point, and they are not likely to authorize the expenditure of funds for a special and costly method of sewage disposal that the water-supply of some other State or city may be protected. The protection of the coast-line against the importation of cholera, yellow fever, small-pox, etc., is also a subject on which there must be either a perfect co-operation among local authorities or a federal supervision, for an efficient quarantine at one seaport is of no value to a country if the disease effects a landing through the inefficiency of the service at another port. There are also many questions concerning protection from indigenous diseases, such as consumption and typhoid fever, which are of interest to all the States, and which could be studied to better advantage under national auspices than by the individual and unco-ordinated efforts of the several States.

For these reasons most of the medical and sanitary men of this country are anxious to see established a National Board of Health. In this respect the United States is behind the age. The English have a central health authority called the Local Government Board, which comes when necessary to the assistance of the local health authorities. Germany has its imperial board, which has become famous by the work of Dr. Robert Koch in its laboratory. Our Mexican neighbors have a Superior Board of Health for co-ordinating the work of the State boards, and even Japan, the latest national adjunct to modern civilization, has a Central Board of Health.

In 1871 a number of sanitarians met for the purpose of organizing an American Public Health Association. One of the objects of this association was to secure legislation on behalf of the public welfare, and particularly to obtain federal recognition of the importance of the subject by the establishment of a National Board of Health. But its efforts in this direction were neutralized by an argument based on the unconstitutionality of such a board. In the cession of certain of their powers by the States to the Federal Government for the general protection, the police powers of the States were not included. The right of the local authorities to be supreme in such matters prevented action by the general government. A few years afterwards, however, the disastrous epidemic of yellow fever which devastated the South in 1878, so overcame the States' rights doctrine in connection with health matters that the strongest supporters of a National Board of Health were the members of Congress from the Southern States. A bill establishing a board was passed in 1879, and this board did excellent service in protecting the country from imported disease, and in promoting sanitary work in the various States. Under the impetus given to sanitation during the few years of its existence boards of health were organized in most of the States, and these latter fostered the organization of local boards and kept up close official relations with them, so that nothing of a threatening character could occur in any part of the State without an immediate reference to the State board for advice or assistance.

The National Board was ultimately destroyed by the continued operation of the influences which opposed its organization. The Marine-Hospital Service now conducts the duties of maritime quarantine on the lines established by the National Board of

Health, but this service does not fulfil the purposes of a federal board in questions of internal sanitation. Medical men and sanitarians are therefore as earnest at the present time as they were in 1871 in their efforts to secure national health legislation; and as the President in his message to Congress last year indicated its necessity, there seems some prospect that this country may soon have a central or federal sanitary bureau or even a Department of Health, as urged by the American Medical Association.

I have given you this general sketch of the progress of hygiene and sanitation that you may be better able to appreciate the relations of military to public hygiene; for the army medical officer in time of peace has usually a civilian settlement attached to his station for which he must act as health officer, and in time of war the sanitary interests of large sections of the country may devolve upon him.

Loss of the Eyes through Mourning.

According to the veteran missionary, Dr. Martin, of India, it is not an uncommon thing to see Hindoo women, one or both of whose eyes have been lost through the manifestations of grief. On inquiring the cause of all this, the usual reply is that she has lost a child, and has cried till she may be said to have cried her eyes out. "That is," says he, "probably what has actually occurred in many cases. It is always a son, sometimes a husband. I never heard of a woman crying seriously for the loss of a daughter. In one case, both eyes had been lost by way of variety, for a buffalo. Buffaloes are prized above cows for their milk, as they give more milk and of a richer quality, though with something of a tallowy taste. The female acquaintance of this woman waited upon her and advised her to weep, and offered to join with her in her efforts." They came, both young and old, some with one eye and some with the remains of two, and some with strabismus and scarrings, and, baring their heads, proceeded to form a circle with their hostess in the centre. Then all, with one accord, continued to shriek piteously for the space of two hours, while they beat their thighs and temples alternately with both hands. This is the customary mode of public mourning, though usually practised only on the death of a husband or son.

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The Hygienic Management of Bright's Disease.

WE can probably say with safety that no other disease is regarded with such terror by the average individual as is Bright's disease; and we can say with equal safety that this terror is unnecessary.

"Bright's disease" does not mean to-day what it did thirty years ago; the term is still in use, and the public has a vague idea that it means some terribly fatal condition with the kidneys as the centre of trouble, but the physician who reads and thinks has very different views of this condition from those that were formerly entertained by the profession.

Unfortunately, comparatively few physicians are addicted to reading and thinking, hence even in the profession erroneous views are still prevalent concerning this condition.

By many the presence of albumen in the urine is accepted as evidence of kidney-disease, while still more will venture a positive diagnosis of "Bright's disease," if in addition to albumen "casts" are discoverable by microscopical examination.

Now, as the result of a personal experience in our own family with this disease, an experience that is unique in so far as recorded experiences go, an experience that records the death of both parents, as well as of five brothers and sisters, an experience of many years and many hundreds of cases, we have reached the conclusion that both of these symptoms, that is to say, the

presence of albumen and casts, are of themselves of but comparatively little significance in determining either the existence or absence of "Bright's disease." While the original seat of departure from health may have been in the kidneys, and while the centre of intensity of disease may be located in these organs, yet "Bright's disease," as we understand it, is a *general*, not a *local* condition, hence are we always liable to a misconception of the true condition of affairs if we look only to the kidneys for an explanation of the obvious symptoms.

This fact must be obvious to any one who realizes the mutual interdependence of all the different organs and parts of the human body. Granting that this disease originates in the kidneys, and that it consists in a degeneration of the structure of these organs, whereby they are unequal to the full measure of eliminatory duty assigned to them, it logically follows that from the very moment when their integrity of function begins to be impaired the balance of the body must be impressed and injuriously affected as a consequence, and that just as the local degeneration progresses, so in proportion will the general conditions become marked. In the beginning, when the kidneys alone are involved, the obvious evidences thereof are so insignificant as not to attract the attention of the individual, and it is only after the local condition has produced general changes sufficiently marked to cause general impressions that the victim becomes aware of some necessity for professional advice.

Hence it is obvious that when the patient consults the physician, "Bright's disease" is no longer a *local*, but a *general* condition, and he who fails to realize this fact will get a true understanding of the situation (if he gets it at all) only by accident.

Among the laity it is a very common practice for those who have, or who think that they have, "Bright's disease," to supply themselves with test-tubes, nitric acid, and a spirit lamp, and to systematically examine their urine for albumen, their spirits rising and falling in direct ratio with the increased or diminished amount of albumen found to be present. This is not only reprehensibly dangerous, but it is also a very fallacious practice, dangerous because it has an evil influence upon the mind, and *fallacious because it is not reliable*; it is unreliable because, as already stated, the presence or absence of albumen is but one factor, and not a very important one, in determining the existence or absence of Bright's disease.

It would be obviously impossible to go into a lengthy argumentative discussion of Bright's disease in the short space of an editorial article, hence assertions which can be substantiated must be accepted. For the benefit of our readers, therefore, we assert that "Bright's disease" is not a local disease, but a general condition, and that it is a condition about which alarm is unnecessary; it is a condition that can prove rapidly fatal or be held in check indefinitely, just as the individual may decide.

Vaccination.

IN publishing the article by Dr. McCandless (in which he savagely attacks the efficacy of vaccination), we are fully alive to the possible effect that it may have.

This journal aims to allow a free discussion of all hygienic questions; it is not designed to force the personal views of the editor upon his readers; hence must we often publish that to which we do not subscribe.

There are many who do not believe in the protective efficacy of vaccination, hence it would be bigotry for us to discard arguments or assertions against it; these non-believers are, however, most decidedly in the very small minority, hence it would be misleading were we to publish such an article without a word of comment.

The very great majority of the medical profession believes firmly in the protective power of vaccination; to our way of thinking, evidence in its favor is conclusive; of course, disastrous results have followed vaccination, but not because the principle was wrong, but rather because of fault in application.

Breakfast Crackers.

Warm one cupful of milk, season with half a teaspoonful of salt, a little pepper and a teaspoonful of butter. Split six Boston crackers, pour the milk over them and let them soak. When the milk is all soaked in lay the crackers, crust down, in a deep baking dish. Put a small pinch of salt, a piece of butter, and a sprinkle of pepper on each one; then lay in the rest of the crackers, seasoning in the same way. Beat an egg, mix with one cup of milk, and pour over the crackers. Bake in a quick oven twenty minutes.—*Philadelphia Press*.



Excessive Perspiration.

It seems to be well sustained that bathing in water in which borax is dissolved—about an ounce or more to a gallon of water—will check perspiration. _____

Not Natural.

Examining Physician Premium Life Insurance Company.—
“Did your father die a natural death?”

Applicant for Policy.—“Nope; we had three doctors.”—
Puck. _____

Breathing and Liver Action.

The circulation of the blood through the liver, and hence all the functions of the liver, are greatly aided by the action of the chest and diaphragm in breathing. When the chest wall is lifted outward in the act of inspiration, air is not only drawn into the chest, but blood is also drawn towards the heart. Deep breathing is thus a very important means of aiding both the stomach and the liver in their work. _____

Meaning of Popular Names.

Some significance should be attached to one's name, and a badly-named child is very apt to be influenced as much by its signification as the stars under which it is born, says the seer. And so here are a few favorite names and their origin and meaning: Anna, from the Hebrew, meaning a prophetess; Annette, from the French, sweet but sorrowful; Caroline, Latin, noble-spirited; Dorothy, Celtic, fruitful; Edith and Edna, Saxon, happiness; Frances, German, free; Grace, Latin, favor; Helen, Greek, a very beautiful woman; Ida, Greek, a lofty mountain; Josephine, French, a saver of life; Lucy, Latin, shining; Louisa, French, defender of her people; Leonora, Polish, victorious; Margaret, German, a pearl; Madeline, French, favored; Marie and Maria, from the French and Spanish, and Mary, from Hebrew, a salt tear or a drop of water.

Why is it?

Take a long, narrow strip of paper and draw a line with pen or pencil along the whole length of its centre. Turn one of the ends round so as to give it a twist, and then gum the ends together. Now take a pair of scissors and cut the circle of paper right round along the line and you will have—two circles, did you say? Try and see. This is a puzzle within a puzzle, and has never been satisfactorily explained by either scientist or mathematician.

Lemonade.

Good lemonade, says an experienced writer, is one of the most perfect drinks ever devised. I can hardly understand why it is not in daily use in place of tea or coffee, and why it does not drive out every kind of alcoholic drink. Perfect lemonade is made as follows: For a quart, take the juice of three lemons, using the rind of one of them. Carefully peel the rind very thin, getting just the yellow outside; cut this into pieces and put with the juice and powdered sugar, of which use two ounces to the quart, in a jug or jar with a cover. When the water is just at the boiling point, pour it over the lemon and sugar, cover at once, and let it get cold. Try this way once and see if it is not delicious.—*Popular Health Magazine*.

Stimulants.

A patient was arguing with his doctor on the necessity of taking a stimulant; he urged that he was weak and needed it. Said he, "But, doctor, I must have some kind of a stimulant; I am cold, and it warms me."

"Precisely," came the doctor's crusty answer. "See here; this stick is cold," taking up a stick of wood from the box beside the hearth and tossing it into the fire. "Now the stick is warm, but is it benefited?"

The sick man watched the wood first send out little puffs of smoke and then burst into a flame, and replied, "Of course not; it is burning itself."

"And so are you when you burn yourself with alcohol; you are literally burning up the delicate tissues of your stomach and brain."—*Good Health*.

To Preserve Health of Females.

Every person, firm, or corporation employing females in any manufacturing, mechanical, or mercantile establishment in New Hampshire, it has been enacted, shall provide suitable seats for the use of the females so employed, and shall permit the use of such seats by them when they are necessarily engaged in the active duties for which they are employed. A fine of not less than ten dollars nor more than thirty dollars for each offence is the penalty prescribed for a violation of this law.

A Good Method.

There was a little schoolma'am
Who had this curious way
Of drilling in subtraction
On every stormy day.

"Let's all subtract unpleasant things,
Like doleful dumps and pain,
And then," she said, "you'll gladly see
That pleasant things remain."

St. Nicholas.

A Sanitary use for Cows' Horns.

A sanitary argument can now be added to the humanitarian against the cruel practice of dehorning cattle. The municipal authorities of Rome, Italy, have taken more advanced ground in relation to the protection of people from infection with tuberculosis through the milk of diseased cows than has been taken by any other public authority. The sanitary regulations of the city of Rome for some time have required an inspection of all milch cows, and this sanitary surveillance has now been extended to the surrounding campagna. When a cow has been inspected and found to be capable of furnishing good milk, the fact is indicated by a mark placed upon the animal's horns and a license issued to the owners of the animal. No milk except that produced by those inspected and licensed animals is allowed to be sold. The inspection is repeated every year. All cows suspected of tuberculosis are subjected to the tuberculin test described in these pages some months ago, and if found to be diseased, are destroyed. This practice is one which may be well commended to the attention of sanitary authorities everywhere.

Gold not a Cure for Dyspepsia.

Cornelius Vanderbilt was elated the other day because he was able to eat a few stewed oysters and not be distressed. Mr. Vanderbilt for several years has suffered from acute dyspepsia, and has been pleased enough when a bit of cracker and a sip of malted milk did not bring agony to him. The gentlemen who told of Mr. Vanderbilt's happiness over the stewed oysters remarked that they were as much of a feast to him as a great course dinner and wines galore would be to a tramp, and yet Mr. Vanderbilt's wealth is certainly close to one hundred million dollars.

How to Walk.

A Delsarte teacher, well drilled in Delsarte's system of expression, says that women can improve their walk without a teacher, though they cannot learn about walking from print. The proper length of the step is twice the length of one foot, and is measured from the hollow of one foot to the hollow of the other. Now, take a piece of tape and sew on it bits of flannel at intervals twice the length of one of your feet, stretch it across the longest room you have at your disposal and you are ready for practice. Maybe you don't know that each foot should cross the same line with each successive step? It should—that is very important—so now you must walk your tape, setting one foot and then the other right over one of these bits of flannel, letting the flannel come just under the instep. Do this, and turn your toes out well and swing your leg from the thigh, and you are far on the road to a beautiful walk.—*Selected.*

Making One's Will.

The making of one's will does not hasten one's death; on the contrary, it has a calming and soothing influence upon the mind. A person who has done it feels that he has done his duty, that he is so far prepared to die. He has no burden upon his mind in reference to what he shall do in sickness. When sickness comes he has no regrets on this subject; he has done his best to prepare for the inevitable hour. If he has made his will aright, he has attempted to do good in his death as well as in his life.

This is not only a reminder that every man who has property

to dispose of should make his will, but also that those who can do so without injury to their natural heirs should give a certain portion of their property for the public benefit. No man has got wealth without receiving it from society at large. It is the growth of population, it is the general industry of the country from which he has benefited. He could not have got his wealth in an unorganized society. Society has done much for him. Let him do something for society when he dies. The time will come, when a man will not feel himself to be dying creditably who does not die generously.

Pat's Wisdom.

An Irishman, journeying on foot through a strange country, stopped at a small inn to inquire the way. The landlord came to the door, and, pointing to a sign-post across the road, said, "Look at that; that will show you the way without disturbing folk." After which gracious speech, he went in again to his more profitable customers. "Bedad," said Pat, with a look of determination on his face, "it's not meself who'll be after askin' the way ag'n!" When next the landlord looked across the road there was no sign-post, for Pat, afraid of again losing his way, had taken it with him.

Tumblers.

Every day we drink out of a tumbler, and never stop to think why so odd a name should be applied to a glass vessel. But there is a reason for it. At old time banquets, little round bowls of silver about the size of an orange, and filled with ale, were set before the guests. When one of these little bowls was empty it was placed upon the table mouth downward. Instantly, so perfect was its balance, it flew back into its proper position, as if asking to be filled again. No matter how it was treated—trundled along the floors, balanced carefully on its side, dropped suddenly upon the carpet—up it rolled again and settled itself with a few gentle shakings and swayings into its place, like one of those India-rubber tumbling dolls babies delight in. This, then, was the origin of our word tumbler, at first made of silver. Then, when glass became common, the round glasses that stood on a flat base superseded the exquisitely balanced silver spheres, and stole their names.

A Good Painless Corn-Cure.

The following is contributed by Dr. A. Murphy, of Octavia, Nebraska, to the *Medical World* :

℞ Ext. cannab. indic. gr. v;
 Acid salicylic gr. xxx;
 Ether sulp., q. s., dissolve et adde
 Collodion flex. . . . q. s. ad . . oz. ss.

Apply for five nights and mornings, then wash the foot in hot water, and the corn can easily be removed.

Magical Growth of Plants.

A French scientist, M. Ragonneau, has just discovered how to make a plant grow from seed in thirty minutes as much as it would under ordinary circumstances in as many days. Heretofore nature has shared this secret with the yoghis of India alone, and the methods pursued by these clever magicians in performing this trick have been often described. They plant a seed in the earth and cover it with cloth. In a few minutes the cloth begins to be pushed upward by the growing plant, which in a short time attains the height of several feet. Various theories have been advanced as to the *modus operandi* of this miracle, one of the latest being that the spectators are all hypnotized by the magician.

During his travels in India, M. Ragonneau saw this trick performed frequently, and noticed that the Hindoos always embedded the seed in soil which they brought with them especially for that purpose. At last he learned that they obtained this earth from ant-hills. Now, as every one knows who has inadvertently eaten one of these industrious insects, ants contain a large proportion of formic acid, with which in time the soil of their habitations becomes charged. This acid has the power of quickly dissolving the integument surrounding a seed and of greatly stimulating the growth of the germ within.

After a little experimenting with this acid the learned Frenchman was able to duplicate perfectly the Hindoo trick. His further researches have led him to believe that this discovery may be profitably applied to agriculture. By infusing ants in boiling water, acid as strong as vinegar can be obtained. M. Ragonneau has achieved the best results and most perfect growth by using earth moistened with a solution of five thousand parts of water to one of acid.—*Lippincott's Magazine*.

Cuban Eggs.

Cuban eggs make a breakfast dish not to despised. For six persons use eight eggs, one teaspoonful of minced onion, four teaspoonfuls of sausage-meat, half a teaspoonful of salt, and one-eighth of a teaspoonful of pepper. Cook the sausage-meat and onion together over a hot fire for five minutes. Beat the eggs well and add to them the salt and pepper. Draw the pan back to the cooler part of the range and add the beaten eggs. Stir until the eggs become thick and creamy, then pour into a warm dish, and serve on thin slices of hot buttered toast.

Wife, Children, and Friends.

When the black-lettered list to the gods was presented
 (The list of what Fate for each mortal intends),
 At the long strain of ills a kind goddess relented,
 And slipped in three blessings,—wife, children, and friends.

In vain surly Pluto maintained he was cheated,
 For justice divine could not compass its ends,
 The scheme of man's penance he swore was defeated,
 Forearth becomes heaven with wife, children, and friends.

If the stock of our bliss is in stranger hands vested,
 The fund, ill-secured, oft in bankruptcy ends;
 But the heart issues bills which are never protested,
 When drawn on the firm of wife, children, and friends.

The dayspring of youth, still unclouded by sorrow,
 Alone on itself for enjoyment depends:
 But drear is the twilight of age if it borrow
 No warmth from the smile of wife, children, and friends.

Waverly Magazine..

A Clock Garden.

It is quite possible to so arrange flowers in a garden that all the purposes of a clock will be answered, says an English journal. In the time of Pliny forty-six flowers were known to open and shut at certain hours of the day, and this number has since been largely increased. For instance, a bed of common dandelions would show when it was 5.30 in the morning and 8.30 at night respectively, for those flowers open and shut at the time named, frequently to the minute.

The common hawk weed opens at 8 in the morning, and may

be depended upon to close within a few minutes of 2 in the afternoon. The yellow goat's-beard shuts at 12 o'clock noon absolutely to the minute, sidereal time,—that is, when the sun attains its highest altitude. Our clocks do not follow the sun, but are generally a few minutes fast or slow, according to the longitude of the place where they are. The goat's-beard, however, is true time all the world over. The sow-thistle opens at 5 A.M. and closes at 11.12 A.M.

The white lily opens at 7 A.M. and closes at 5 P.M.; the pink opens at 8 A.M. and closes at 6.30 P.M. In the towns few people know about such details as these, nor are the flower clocks often seen anywhere, though they have been constructed occasionally. Even in these days, however, farm servants often take their dinner hour from the sun, or, failing that, from the yellow goat's-beard, which is never mistaken, whether it can see the sun or not.

Preparing Grain Food.

It is especially important to carry out the method of slow, gentle cooking in the preparation of mushes and other grain foods, as it dispenses with the stirring to a great extent. Mushes are stirred to prevent their sticking and burning, though it is not nearly so efficacious for this purpose as many imagine. It is the starch that sticks, and this is set free by the stirring, so that in some cases the dish is more apt to stick and burn with stirring than without. This is true of samp, Southern hominy, etc. With three or four quarts of water in a tin vessel it will cook evenly during the four or five hours necessary to make it tender, without burning, but stir it a little and it will be likely to scorch. If it barely simmers, however, it will cook just as fast and be in no danger of scorching. If it needs more water, add it boiling hot. The small hominy used at the North has been found so difficult to cook, even over slow fires, that the hominy-boiler has been devised for it. One part hominy is poured slowly into three parts boiling water, and stirred five minutes, or until it sets (does not sink), then covered closely and put where it will barely simmer three-fourths of an hour, or an hour, according to its coarseness. Stir it as little as possible in taking it up with a large spoon, and if a good article it will be light, delicious, and quiver almost like a jelly.—*Philadelphia Press.*

Obstinate Royal Invalids.

“A king has the right to die, but not the right to be ill,” said Louis XVIII. to his doctors, forbidding them at the same time to publish the truth about his condition. Alexander I., perhaps in imitation of the Bourbon he had helped to his throne, acted upon the same principle, though he did not embody it in a paradoxical epigram. For more than forty-eight hours—namely, during November 12 and 13, 1825—he obstinately refused to be bled, notwithstanding the earnest persuasion to that effect by his own physician, James Wellye, and of Stoptingen, the medical attendant of the empress.

On the 14th, towards evening, Wellye, finding all persuasion useless, plainly told the Czar that, having refused the aid of science till it was too late, he had no resource left but the aid of religion. “And I have an idea that that will prove a broken reed to you,” said the blunt physician, a worthy predecessor of Zacharin. “I am afraid that religion will be of little use to the man whose obstinacy in refusing all medical aid is tantamount to suicide.” Thirty hours later the eldest son of Paul I. had breathed his last.—*Illustrated London News*.

Superstitions about Babies.

The Manx people believe that it will dwarf or wizen a baby if any one steps over it or walks around it.

In some parts of England people bind up the infant's right hand that it may have riches when grown.

In Yorkshire, England, a new-born babe is placed in a maiden's arms before being touched by any one else, in order to insure good luck.

In South America, a book, a piece of money, and a bottle of liquor are placed before the infant the day it is one year old, to ascertain its bent in life.

A baby is considered lucky in Scotland if it handles its spoon with its left hand, and it will be perfectly happy and successful if it has a number of falls before its first birthday.

In the north of England, when a child is taken from a house for the first time, it is given an egg, some salt, and a small loaf of bread, and occasionally a piece of money to insure it against coming to want.

In Germany it is considered necessary that a child should

“go up” before it goes down in the world, so it is carried upstairs as soon as born. In case there is no upstairs, the nurse mounts a table or chair with the infant.

And there it is.

A puzzle which wants a lot of finding out is the manner in which you tell in which hand another person holds a silver coin and which a copper coin. This must, of course, be worked by numbers. The right hand must be called an even number and the left hand any odd number. Then tell the person holding the coins to multiply in his own mind the hand that holds the silver coin by any even number, and that which holds the bronze coin by any odd number. Then tell him to add the two together and ask him the result. If the total amounts to an even number, the silver coin will be in the left hand, and if an odd number in the right hand. For instance, say that he holds the silver coin in the right hand, which is called by an even number, say 8; multiply it by 4 would bring it to 32. Multiply the left hand, which we will say is 3, by 5, which would be 15; this added to 32 makes a total of 47, the number indicating where the silver piece is. Again, say the silver piece is in the left hand, then four threes are 12; right hand multiplied by odd number, three fours are 12. These added together make 24—an even number, and the coin is in the left hand.

A Sweat-Bath.

A nurse, in writing to the *Nursing World*, gives the following directions how to give a child a sweat-bath: To cause a child to sweat freely without the use of medicines, I would lay three warm woollen blankets on a comfortable bed and place on these a linen sheet wrung out of cold water. Having removed all the clothes from the child, I would lay it on the sheet, and tuck the latter closely round the body and limbs, each limb being separately wrapped. I would then wrap the blankets snugly around the child, and place outside of these half a dozen hot water-bottles well corked. Another warm blanket should be placed over all to prevent the radiation of heat. I would see the child's head was not covered, and that it had water to drink if desired. After the child had remained in this “pack” for half an hour I would sponge off the surface of the body with tepid water, wipe dry

with clean towels, put on a clean night-robe, and put the child back in bed with plenty of dry covering. All articles used in the process would then be set aside to be disinfected.—*Medical Brief*.

Woman Man's Physical Superior.

According to one writer, men will have to "watch out" if they do not mean to grow physically inferior to women. He says, "It is probable that no year ever witnessed such a general tendency on the part of women to avail themselves of every opportunity for out-door exercise. She has played golf, cricket, and lawn tennis more than ever before, and certainly such an army of wheel-women as has scoured the country highways and by-ways this summer was never seen before in this country. The result is that the coming generation of women bids fair to show points of physical development that will surpass the sex that has always enjoyed a monopoly of brawn."

Oldest Family in the World.

If there be those among us puffed up and still puffing with the idea that what they call their "family" is old and gilt with the much cherished decoration of a long pedigree, they will find in the *Cosmopolitan Magazine* some information to make them resume their normal shape. A study of old families is contained therein. When it comes to pedigree there is one gentleman to whom the world must take off its hat, not as facile princeps or primus inter pares, but as a great and only none-such. This gentleman, who has risen into the front rank of political power and notoriety but recently, is the Mikado of Japan. The Mikado is the religious head of the Japanese as well as their ruler. His place is hereditary, and it has been filled by members of his family for more than two thousand five hundred years. His is incomparably the most ancient lineage known. The Mikado is the one hundred and twenty-second of the line. The founder of it, whose hope of posterity, in his wildest dreams, could not have equalled the result, was contemporary with Nebuchadnezzar, 660 B.C. Of the seven great religions enumerated by Max Müller as possessing Bibles the Mikado's family is older than five. That still permits license to the sons of our revolution to get as gay as they like, but it forbids them to become haughty over thoughts of their grandfathers.—*New York Sun*.

Microbes a Necessity.

Popularly, microbes are looked upon as ubiquitous and unmitigated evils,—the breeders of disease and carriers of contagion,—corresponding in actual fact to those all-pervading demons of the air which figure so largely in ancient and mediæval mythology. All the resources of medical and sanitary science are employed for their extermination, or to ward off their invasions, and the healthfulness of any given locality is directly proportioned to the degree in which they are absent from its atmosphere. No doubt there is a great deal of truth in this conception. If all microbes could be suddenly annihilated, the plagues of cholera, typhoid, and tuberculosis, as well as countless minor bodily afflictions, would disappear with them. But would mankind, on the whole, be any better off? It is known already that many kinds of bacteria usually present in the intestines perform an important part in preparing the food for digestion. Recently, a Russian professor has conducted an interesting series of experiments for the purpose of determining the influence of sterilized air upon vital processes. He confined a number of small animals in such a way that the air they got was absolutely free from microbes, and their food as nearly as possible. Every precaution was taken to obtain correct results. The experiments, described in *Natural Science*, seemed to show: (1) That there was a remarkable decrease in the assimilation of nitrogenous matter when the air and the food were deprived of micro-organisms. (2) That the animals lost weight more quickly under the sterilized conditions than under normal conditions, while at the same time the excretion of nitrogen and of carbonic acid was more than usual. (3) And most remarkable of all, in a large number of the experiments the animals died, sometimes a few minutes, more often a few hours or a few days, after the beginning of the experiment. This fact is pronounced “absolutely inexplicable,” except on the novel supposition that the sterilization of air is fatal to life, an idea which physiologists, it appears, are not yet ready to accept. Nevertheless, it may now be regarded as established, not only that the agency of microbes is often beneficent, but that it is essential to the proper working of the animal economy.

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How to Keep Well.¹

BY C. N. PALMER, M.D.,

Lockport, N. Y.



HERE are certain general principles necessary to be understood before special rules can be laid down and directions given for you as individuals to follow intelligently to keep well. Otherwise arbitrary rules are meaningless and readily forgotten and of questionable value.

The general information leading up to special suggestions is all that I can possibly give you, but should opportunity offer later we hope that we may be able to build understandingly on this foundation, and I shall only be rejoiced at an opportunity to assist you in so doing.

In unravelling the mysteries of how to keep well, it may at first thought seem to you that the doctor is giving away his birth-right, but I beg of you not to exercise your imagination or sympathies to any great degree in his behalf because of his exposure of "state secrets" prejudicial to the interests of the profession, for the reason, in the first instance, that to know is much easier and more convenient than to do what is good to do, which, with the limited interest displayed by the general public thus far in the prevention of disease, would make its open secrets infinitely safe.

¹ An address delivered at First Presbyterian Church, for Ladies' Missionary Circle, Lockport, N. Y., March 4, 1896.

But, on the other hand, if the physician's time is now occupied in endeavoring to cure your many ills, in how much greater measure will his time, talent, skill, and exertions be taxed when he shall attempt to keep you well.

No; we have no idea of going out of the business, and may still be consulted at the old stand, at the usual hours, when certain necessary reforms, of which we shall speak further on, have been attained, we hope to be more essential and useful to you and busier than ever. But the subject we have chosen for this short talk is far too vast for more than a mention of a few general principles, with the hope of stimulating your interest and securing your assistance in the work, which the profession has so earnestly undertaken, but which cannot be fully consummated without the hearty co-operation of the people at large.

In the consideration of this subject, I shall briefly recall some of the different stages of development, preceding and leading up to the present dawning of the better day, when the "pound of prevention" shall leave to be required only the "ounce" of cure. We shall then endeavor to obtain some general idea of what is being done, the much that is still necessary to be done, the proper direction of action, the correct sphere of the man of medicine, your province, rights, and necessary aid in establishing the universal dominion of health, and a glimpse of the future when all this shall have been accomplished.

The effort to cure disease known to us to-day under the general appellation of the practice of medicine, in some form, is about as old as humanity. Many great minds in all ages have been consecrated to the work.

In the earliest times, owing to the superstitions of the people, disease was attributed to evil spirits. And as the alchemist burned the midnight oil to convert the baser metals into gold, as the searcher dug and delved after the philosopher's stone, so the "doctor," or rather necromancer, with incantations and calculations, amulets and charms, exorcisms and diabolisms, assayed to combat the ills of poor humanity; and, like many other systems, the one was about as successful as the other. And I opine that not until the philosopher's stone perfects the art of magic, and all is "gold that glitters," can we hope to look for absolute success in the cure of disease. This old "faith cure," although signally failing in results, and being a trite illustration of the old truism that "faith without works is dead," has

from time to time, under different disguises, been revived, only to fail.

Later on, certain tasks were put upon the sick, which if they succeeded in accomplishing, their recovery was assured, as otherwise they died in the attempt. This was to "kill or cure" treatment, and was very successful in its way. But as it was much more convenient when ill to be acted upon than to act, invocations or laying on of hands, sometimes most severely, had its day, and the results can be better imagined than described. These were followed by the system of internal and external medication, which gradually broadened to include an unlimited number of substances, both active and inert, to occupy the minds and stomachs of men. And as greater dynamic and perhaps curative results were accomplished than by any or all of the other systems, it has come down through the ages, modified and amplified, to the present day.

In the development of this line of treatment, the medical man has been untiring in his energies, exhaustive in his researches. No plant, tree, or shrub, in short, no vegetable or mineral substance, has escaped his watchful notice, and each in its turn has unbosomed to him its peculiar characteristics and the mysteries of its action upon the human form divine. With this tremendous armamentarium, and the thorough knowledge of the effects of medicinal substances, separately and conjoined, what more can we ask? Well, let us see.

We have learned that most diseases have their own peculiar cycle, their period of invasion, their period of limitation, their crisis, and their decline. We have also learned by long experience and repeated trials that these periods may be modified, though seldom abridged, and that when fully established, usually run their course; though by the proper administration of this or that; as the careful and experienced mariner avoids the rocks and shoals, and outrides the tempest, so the doctor's skill steadies the wavering pulse, allays the fitful fever, soothes the racking pain, calms the wild delirium, strengthens the weakened heart, inspires the waning hope, till the eye regains its original lustre, the pulse has lost its irritable thrill, and the silver cord is strengthened, that else would have been unloosed.

And thus we perceive that the investigations of the ages in the line of medical research are far from having been made in vain. But the number of diseases has not been lessened, nor

their virulency modified except at the bedside, after the disease has been established, until within the limit of the past few years. Hence, we may truly say, that under the old system, disease has in the main run riot and rampant, without let or hinderance.

To be sure, the immortal Jenner, in the face of discouragements and disappointments, sneers, and jeers, took the first great step in the right direction, that of *preventive medicine*, just 100 years ago, when he demonstrated to the world the immunizing power of vaccination. But nearly a century had passed before even the greater minds of the age began to recognize the fact that this wonderful discovery unveiled a principle of universal application, which, when properly evolved and applied, would revolutionize the world by furnishing the key that would immeasurably assist in the amelioration and prevention of many or all diseases.

To-day the light is breaking, and we are beginning to enjoy the realization of this magnificent scheme. By inoculation hydrophobia has been robbed of its terrors,—its once inevitable power to torture and kill. Antitoxin has diminished the fatality of that dread disease diphtheria, over 60 per cent. in the last three years. Experiments are now being conducted on these lines, which, when perfected, will render cancer and consumption amenable to treatment.

But this is not all ; health boards have been formed,—national, State, and municipal,—aye and in almost every township. What have they done ? They have so successfully quarantined our borders that the dread disease cholera has been absolutely driven and kept from our shores. They have so throttled yellow fever in its lair that the disease is dying out instead of its myriad victims. They have so purified our cities as to largely remove the hot-beds for the germination of death-dealing diseases, thereby diminishing the death-rate in the last decade from 25 to 50 per cent. per annum. They are assisting us to teach the people, to test the water that they drink, to examine the food they eat, to question the purity of the air they breathe, to inquire, in fine, “why am I sick ?” which is the key to the solution of the first great principle, overtopping all others,—of *how to keep well*. This is at last becoming the great question of the day. We have been working for centuries on the wrong end of the lever. Sickness is the attempt of nature towards the restoration of an equilibrium

already destroyed, in which endeavor many times, though aided by the most advanced art, she must of necessity fail. The world has practically for ages, ruthlessly and unquestioningly, been absorbing into their systems various unknown poisons, and after suffering from their effects groped about, almost hopelessly, for an antidote.

Instead of the scriptural injunction to "avoid even appearance of evil," and thus prevent his entrance into the system, we have in our ignorance invited him to come, provided ample means for transportation, unlimited stores for his substance, a choice of weapons, even concealed weapons, and allowed him to strike the first and mayhap the fatal blow before making the least effort towards self-protection. What language could we find strong enough, in condemnatory terms, to express the foolhardiness, the absolute idiocy, of dealing with even a hostile nation after this manner? Then, in how much greater measure, to deal thus with concealed foes, as deadly as numerous, as insidious as impalpable! Nor is this consideration of the subject in the least overdrawn.

Our recent researches have been in the right direction and have been signally rewarded. We are beginning to understand the etiology, the *true entity* or *origin* of disease. We are beginning to learn that nature never forgives, and always takes advantage of our ignorance, our carelessness, or our prodigality. That she at once endows each particle of refuse which we fail to destroy with countless forms of life and activity. And while many of these are not only harmless, but even seek to do for us what we have failed to accomplish for ourselves, others, and their name is legion, are inimical to our health, happiness, and even life, and mercilessly attack us with their tiny, though no less destructive, weapons of warfare.

It may now be confidently asserted that all diseases either originate directly from, or are dependent upon, these minute organisms, for their transmission and virulence.

Possibly some of my audience might confess to a shade of disappointment that the trend of my remarks admits of so little personal application. You had perhaps hoped, from the title, that I might confide to each of you the coveted information of how to steer your own little bark, safely and singly, through whirls and eddies, rocks and shallows, to far-off centenarian shores. But this can scarcely be, we are so interdependent,

each upon all the others, that success can only be assured by the universal application of hard and stubborn laws, along steady and fixed lines.

While it is true that the transgressions of one may make a nation mourn, it does not also follow that the virtues of the one will prevent the vices of the many, rather though each of us may do much under favorable circumstances, and united individual effort in the matter of self-protection with great benefit, that much would be comparatively little to what would be necessary for one to escape from the infection of rotten environments. Such escape is rather an accident or a miracle.

But the acts of a nation are only the combined action of individuals, and it is in the preservation of health as in everything else, that we may only find success and true happiness in helping ourselves in such a manner that we are benefiting others. Unless the world has been made a little brighter, better, and happier for our having lived in it, unless we have succeeded in developing a smile, where without us there would have been a tear, unless, in fact, in doing for ourselves we have accomplished something for those around us, our life has been in vain and not worth the preserving.

But we must return more directly to our subject. As has been previously mentioned, all refuse undergoing a process of decay is teeming with germ life. In fact, germ life is necessary to decomposition. You all know how readily milk becomes "turned," as it is familiarly called, but milk heated to 200° F., and protected from the air, will keep for weeks as sweet and pure as when first treated, and for the reason that the heat destroys the germs, which produce the vital organisms, necessary to decay. The same is true to a considerable extent with the impurities in water or any questionable article of diet; and for the same reason your fruit and berries when properly put up remain fresh and wholesome indefinitely. The decaying contents of a cellar have again and again brought death and desolation to a household, and, indirectly, to a neighborhood or a city. Even sewers are an abomination, and the contributions they receive provide the endless elements of infection for unlimited distribution; and when reforms are completed, no such thing as a sewer containing refuse will be known to exist. All refuse will daily be taken to chemical laboratories, especially provided by law, and not only reduced to innocent forms, but also back to their valuable chemical constituents,

so necessary to the soil for productiveness ; and when thus returned will pay as well for their transmutation as fertilizers as for health. While we are obliged to use sewers as a choice of evils, the greatest care should be exercised that they contain as well as the connections to them numerous traps, as at least partially preventing the infection of our houses by them. Through the efforts of the medical profession, the government in this and some other States has established laws to that desirable end.

As another phase of our subject, take, for example, the condition of our country, resulting from the advanced state of civilization, and you will find that the masses of the people live fully up to the enlightenment of the age. A law-breaker is the exception ; the peaceable citizen, who respects the rights of person and property, the almost universal rule. And this obtains, notwithstanding the often apparent advantages of crime.

Now this condition of things exists because, in a general way, the American citizen understands the principles of law and the natural claims of right and justice. As a result, the criminal is an outcast, and every possible safeguard is thrown around the community for its protection against him.

Now, with the same universal understanding and appreciation of the means necessary for the protection of health and, consequently, life, and with no exceptions to be guarded against, from a special criminal class, because all are alike interested and benefited, how much more successfully would be carried out the life-saving scheme than has already obtained in the protection of property.

The great "incubus" is lack of knowledge, and, consequently, lack of interest in the all-important subject of *prophylaxis*, or the means for the prevention of disease. How many in this enlightened audience have heard of "prophylaxis"? And still it should, and some time will, become a familiar household word.

How many of you have seriously thought of the importance of the bureau of vital statistics, also organized through the efforts of the medical profession?

Let us investigate the matter a little. When the real cause of death—immediate and remote—is known and recorded in every case, for a series of years, in any and all communities, some given locality is found to contain conditions, making the death-rate especially high in one or more classes of diseases, and exceed-

ingly low, or entirely exempt, from others. As a result, such conditions are investigated, the special causes operating injuriously, ascertained, and the remedy applied. But further than that, each *individual* has certain predispositions, hereditary or acquired, making him or her especially susceptible to certain diseases. And when this fact is thoroughly understood and appreciated, such persons would surely avoid residing in such localities as have been proven to be particularly hazardous to them.

Although the present death records are far from complete or specific, the demand for such boards will be much greater, with correspondingly better results, when the public have become alive to their importance, so that they may be successfully carried out.

Not only every death and its cause, but each case of illness and its origin should be reported and tabulated; and when that has been accomplished, the process of stamping out disease will be far in the lead, and human longevity increased in an enormous ratio, and the public fully realizing the advantages of prophylaxis will soon be led to demand of the doctor of medicine that he wholly, and not in part, as at present, assume his legitimate sphere,—that of *being the conservator of health*. You will then demand of him the requisite knowledge and skill to *keep you well*. He will be made responsible for the purity of the food you eat, the water you drink, the air you breathe, for the healthful construction of your houses, attend to the purification of all your surroundings, quarantine you against every possible means of contagion or infection, and bring into exercise the means necessary to make quarantine unnecessary. To carefully examine you and each member of your family as to your predispositions and present conditions, and to so thoroughly understand the dangers and immunities incident to every inch of territory, as that he may be able to locate you and yours in that particular spot of greatest salubrity for such constitutions. This will not *only* be possible, but absolutely certain, when vital statistics shall be properly maintained; thus securing for every one the greatest measure of success, because there, with health and vigor, the best exercise of your faculties becomes possible, while health, contentment, and a long life for their enjoyment will be reasonably assured.

Is not this reasonable? Is it not true? Is it not getting hold of the right end of the lever? and will it not revolutionize the world?

Look at our present environments ; the elements of disease are all about us ; and yet comparatively little heed is given, even to the timely warning of your trusted physician. Examples throng the mind, but time passes, and a single illustration must suffice.

Has he not repeatedly informed you that no well-water in a city is safe as a beverage ? That it may have been polluted for years, and have been unknowingly the cause of much illness ? And even if pure up to to-day, by to-morrow may be reached by some artery of filth that has been steadily approaching it for months or years, freighted with the foul elements of death. Have you ever asked him to analyze it ?

On the contrary, did you not say to him, “ Why, doctor, *our* well is a fountain of health ; the neighbors from all about are glad to use it ; it is so clear and cold and refreshing. *That* well over *there* I have been long suspicious about, and am quite sure *that* should be filled up. But *ours* ! why, it has become a Mecca, and almost sacred. Such associations, why father and mother, and all the dear ones that are gone, died using it.” And the doctor dared not even meekly reply that perhaps by using it they died.

Why, my friends, a doctor is as safe in kicking a man’s dog as in saying a word against his well.

It is indeed true that a healthy, vigorous man is one of the greatest antiseptics, or, in other words, germ-destroyers, known. He will vanquish more germs in a day than you can count in a century ; and he may have drunk polluted water, breathed infected air, and consumed food that would kill a centipede, and still live to tell the tale, but then again he may *not* ! He is not always and everywhere invulnerable. Through some unguarded portal the busy microbe gets in its work, and after exercising the multiplication table, in a way unknown to Bar-num’s lightning calculator, the citadel is stormed by overwhelming numbers, the doctor is called, then the undertaker ; and I was about to say, “ Thus ends this strange eventful history.” But we will see. He is piously accorded Christian burial, and the world goes on, forgets, and is in turn forgotten. But the microbe lives and multiplies and waits, until decay brings liberty, and they are at last, perchance, floated off to that cherished well to be from there again distributed.

But all these matters will be righted in the reforms of the

future. The time will come when the bureau of vital statistics will gloriously ripen into a *bureau of general prophylaxis*, with all that that implies. When medicine will become an exact science, because conducted on right lines and on an absolute basis. When health and happiness shall gain supremacy ; when age shall be the general cause of death ; when the name of Methuselah shall be common and appropriate, and all the nations of the earth shall rejoice and be glad.

Think on these things. This is the new gospel of health. Keep it before the people. Call upon your doctor to teach you, that he may less often treat you. Establish health societies. Study the vital principles of life, and promulgate them for the healing of the nations, and God speed health's happy day.

The Legal Enforcement of a Hygienic Code.

BY LAWRENCE IRWELL, M.A.B.C.I.,

Buffalo, N. Y.

IN reply to your invitation, contained in the March issue of the ANNALS OF HYGIENE, as one who insists, day in and day out, upon the necessity of observing the laws of nature, I beg leave to submit that any legislative attempt to enforce a hygienic code would end in failure. As it is, the statute book of the State of New York is filled with laws which are inoperative, although it is doubtless true that the barber-shops are closed on Sundays, outside New York City, in accordance with the law. The drinking shops, however, are open on Sundays in spite of the statute which requires them to close.

Education is what is really required ; and if the educational method is to be of any value, the reform should begin at the top, —viz., with the physicians themselves. For the ancient *dictum*, “physician, heal thyself,” let us substitute, “physician, educate thyself.” In the United States there are to-day about 140 so-called “medical colleges.” Now, Dr. Eggleston has written, in the *North American Review*, that “there are not a dozen of these that would be tolerated for one moment in any civilized foreign country.” If boys were compelled to have a thorough general

education (this necessarily includes either geometry or logic as a mind-trainer), before entering a medical school, there would be fewer "physicians" who prescribe "medicines" without saying one word about diet or general hygienic rules. In truth, a "medical education" which does not commence with biology, of course after an examination in the subjects of general knowledge has been passed, is a solemn farce, which would not be tolerated outside this country. It is well known, of course, that in Europe American medical (and legal) licenses to practise are, with few exceptions, a subject for merriment. President Jordan's article in the *Forum*, upon "Pettifogging Law-Schools and an Untrained Bar," gives some valuable information upon this point; but I must not digress. There is now one "doctor" to about every 650 inhabitants of this great republic; and the bulk of the population believes that because a man is dubbed "doctor," he must be a very learned individual. Educate the family physician, and we may then hope to educate the people, for hygienic education, as far as the people who are too lazy to read is concerned, can only come through him. Make the "doctor" a learned man in the true sense by *compelling* him to receive a suitable education. No other process than compulsion will answer, since the average "medical student" of to-day refuses to learn anything that is not required for examination purposes. When this method is adopted—and nothing short of federal control of medical licenses will be satisfactory—the result will be seen in the hygienic acquirements of the physician's patients; in the reduced number of "doctors," in the lessened sale of patent medicines, and in the diminished death-rate from preventable causes.

Temperance.

BY MISS E. S. DYER,

Patterson, Ohio.



LIFE is a flame—a union of oxygen and carbon in the fleshy nitrogenous crucible. This flame may burn slow and last long, or it may be accelerated by various agencies. Life in the young and strong is latent and capable of intensification of development.

Exercise kills the old and feeble; it often seems to benefit the young; it adds, however, nothing to their constitutional sum-

total ; it augments, apparently, life and strength by developing, by setting the flame burning faster (as it must to stand the strain), by gradually habituating the organism to a faster rate of living, which, according to logic and fact, must have the effect to wear it out sooner.

The same principle applies to stimulants, including medicines ; they call forth, and start in the way of being spent, the latent or reserved powers of the individual. And what then ? Pause when the devil tempts you with that bewitching chalice filled with any one of the many forms of the life-dissolving elements ; remember these hard facts.

All artificial, excited power or pleasure is bought too dearly, a thousand to one, and pay-day must come. Whatever makes you feel better than ordinary will, in the long run, make you feel permanently worse. Whatever makes you strong will make you weak. Develop your full powers of muscle and digestion by protracted arduous exercise and extra generous diet, and you are quite likely in time to become a miserable dyspeptic and rheumatic.

Live slowly, cleanly, and naturally, and you are likely to live long, and, what is of much more importance, painlessly.

All medicines are either foods or poisons. If they are foods, they are good for the well ; if they are poisons, they are not good for the sick. Whichever way you view them, they are better adapted to the use of the well than the sick.

Taking medicine and dram-drinking or stimulation in any form rest on the same principle, and naturally merge together. We desire to be happy, we want to feel better. Well, as long as we have enough of that unknown something called life to make a brisk fight against assaults, we can command a temporary tumult of sensations by putting ourselves in conditions unfavorable to longevity, discounting our future, consuming ourselves. That is what medication and stimulus amount to always, if they amount to anything.

Hasten the day when the physician shall be no longer exorcist, wonder-worker, demon-compeller, shriving, in pretence, the laity of their physiological sins, but believer in nature, scientific teacher, treating his patients as pupils in the art of longevity. Happiness is a consequence of bodily health. The child and the savage arrive at health by instinct,—that is, involuntary knowledge ; the stoic has been the rounds, ends where he begun ; between is the region of doubts, agonies, and storms.

The art of health is summed up in one word, temperance, for temperance includes hygiene.

Temperance is the equilibration of the faculties and functions. Intemperance is the immoderate gratification of any propensity, unbalanced activity of any faculty, force expending itself too much through any one channel.

The secret of happiness traced to its last hiding-place is seen to be the most obvious and tritest of truths kicking about loose on the surface of life,—it is temperance, preservation of the natural balance.

The highest practical wisdom is to learn what temperance is in detail, and to establish in the mind a habit of scientific faith in the inevitability of the punishment which intemperance draws after itself.

Some Thoughts on the Origin and Spread of Contagious Diseases.¹

BY W. H. FAULDS, M.D.,
Luzerne, Pa.



SIDE from aseptic and antiseptic surgery, there is, perhaps, no subject in which, at present, the laity and medical profession are taking greater interest than the origin and spread of contagious and infectious diseases.

With the advent of antiseptic surgery came the germ theory of disease, and the theory of contagion and infection through micro-organisms, and in this way was developed a force which has revolutionized surgery, and set at naught almost every principle upon which the leaders in sanitary and medical science had for centuries based their teachings and investigations.

That such a radical change in the fundamental principles of these great factors in the world of science should work a corresponding change in the means used for the prevention and spread of contagious diseases, goes without saying, and that the

¹ A paper read before the Luzerne County Medical Society.

laity, physicians, and sanitarians should be tardy in adapting themselves to the new order of things, is what might be expected. However, we believe the time has come when we, as physicians, ought to be preparing ourselves to measure up to the standard required by the new *régime*, and thus escape the censure which is sure to come from a confiding public, if we prove recreant to our trust. But in order that we may be successful, we must first have a clear conception of the principles which are to guide us in our efforts to accomplish the end in view.

A moment's consideration of the subject teaches us that almost all the vital processes are based upon the principle of supply and waste; the waste products serving as food for plant and vegetable life, and these in turn furnishing food for the higher and lower orders of animal life, and that waste material or filth becomes a source of disease only when misappropriated or diverted from its proper channel. In other words, the waste matter of animal life, if not properly appropriated, furnishes a hot-bed for the reproduction of micro-organisms, which are now recognized as the chief factors in the production and spread of contagious diseases.

The land and city refuse swept into our rivers furnishes pabulum to the finny tribe, and they in return supply the most delicious meats to the inhabitants of every clime. But not only does the refuse contribute to the maintenance of all animal life, but the lower order of animals are sacrificed that those higher in the scale may subsist.

It is also true that this higher order may become the easy prey of the microscopical world, being sometimes swept down upon by an army of these minute invaders, their onslaught being more deadly than that of the best disciplined soldiery armed with the most approved weapons of modern warfare.

But besides being the avowed enemies of the human family, vulture-like, these infinitesimal wonders are ever on the alert, watching for the first symptoms of decay, always ready to assert their prerogative whenever a soil favorable to their development and propagation is spread out before them. Unlike the human family, that select the best in the line of animal and vegetable foods for their sustenance, these disease-producing organisms revel only in tissues of low vitality, caused either by temporary departure from health, or the incipient stages of the process of degeneration and decay.

So intimately associated are they with the higher forms of life that they are found everywhere, even occasionally in healthy tissue. "They exist in the air, the soil, the water, in our clothing, on the surface of our bodies, and on the mucous membrane of the intestines and respiratory tracts." But as we have already intimated, it is chiefly in decaying organic substances that they find a soil most favorable to their propagation and development. It is this special affinity of bacteria for animal tissue that has given origin to all the contagious and infectious diseases. Thus in scarlatina, diphtheria, measles, small-pox, typhoid, whooping-cough, and a host of other affections, we find in each its peculiar disease-germ, each having distinguishing features as familiar to the bacteriologist as the different types and races of the human family.

The question is sometimes asked, "Where did the first case of contagious disease originate?" One answer to this question is, that until spontaneous generation is proven and life shown to be the result of physical forces, these micro-organisms, capable of producing themselves, must rank with the higher orders of organic life, whose origin can only be traced to Him who in the beginning created all things. If the smallest germ of animal or vegetable life may be the product of physical forces, then all life, yours and mine included, may be the result of forces in nature, and we need no longer look to a Supreme Being to solve the mystery of the origin of life.

But assuming that the pathogenic germs had their origin with other forms of organic life, the question as to the origin of contagious diseases still remains unanswered, and the only explanation we have to offer is, that the first case of contagious disease was caused by the presence of virulent bacteria in human tissue of lowered vital resistance, and that the pathogenic bacteria were made such by cultivation in a favorable medium, furnished by the habits and environments of man at some period in the history of the human race.

That the virulent bacteria were not in their pristine state capable of producing small-pox, diphtheria, scarlatina, cholera, and syphilis seems reasonable from the fact that these diseases are spread only by contagion or infection from a previously existing case, and that these diseases can be clearly traced to the countries in which the primitive germs were first made pathogenic. Again, it would be hardly fair to assume that these countries were excep-

tions to the rest of the earth's surface in the matter of containing these germs, and that primitive man took up his abode in the only countries fruitful of disease-germs, and which have since given as a legacy to his posterity almost every pestilential disease to which human flesh is heir.

To me, then, a logical inference is that bacteria are present with the other forms of organic life in all parts of the habitable globe, and that all that is required to make them pathogenic is the favorable conditions which developed cholera and other germs in the countries where they first made their appearance.

The argument, then, is that the conditions favorable to arousing the microbe to a state of activity must exist before the disease can make its appearance. But the bacteria, once active, act in the presence of conditions that could not arouse the microbe from its dormant state. To illustrate: cholera, so far, has failed to gain a foothold in this country because the conditions here are not such as to arouse the dormant germ. However, the active bacillus from abroad, that has become virulent from repeated multiplication in a favorable soil, produces the disease here in its fatal form among the susceptible, just as it does in older countries. The same, I believe, is true of scarlatina, small-pox, measles, and diphtheria. Diphtheria was known and described by Galen. Memorable epidemics existed in Rome as early as A.D. 856, but it was not until eight hundred years later that this disease made its appearance in Switzerland and Germany, a century later in Naples, and about the same time in our own country.

So of scarlatina, although known as early as the first century of the Christian era, it was first described by an English physician in the sixteenth century, and extended to the Western World through European shippings in 1735, to Iceland in 1827, and to Greenland in 1847, showing conclusively that this germ, like diphtheria, was fostered and brought to a state of virulency still unknown to us, by a people who, in a state of ignorance and religious lunacy, looked to their gods for relief, while they themselves were violating every principle of the laws of health. Again, small-pox was first mentioned by an Egyptian physician in the sixth century, and undoubtedly this germ owes its extreme vitality to the favorable conditions under which it was aroused into activity, and its virulence developed and increased.

So we might mention other diseases which exist here, but from which we would never have suffered had they not been brought to us from these disease-breeding countries, because the conditions here have so far not been such as to arouse the dormant germ.

This, then, is, in brief, our hypothesis concerning the origin of contagious and infectious diseases, the basis of which is found in Koch's theory, which must now be recognized as the starting-point of everything bearing upon this subject.

Prior to the discovery of Koch, there were many theories extant regarding the spread of contagious and infectious diseases, none of which, however, received confirmation in more recent investigations. But now the generally accepted theories are those of this great leader in scientific thought. And as his investigations have shown that all contagious diseases are dependent upon the presence of a micro organism, capable of self-propagation, the theory that every case of a contagious disease must have had its origin in a previous case, at once became tenable.

This theory, however, was advanced by medical writers prior to the investigation by Koch of the germ theory of disease. Macnamara, in his discussions on cholera, says, "No amount of overcrowding, no special condition of the soil, nor any circumstances with which we are acquainted, has ever been known to originate Asiatic cholera *de novo* among men removed from its endemic influences, or unless the disease has been epidemic beyond the confines of India."

Again he says, "Every outbreak of the disease beyond the confines of British India may be traced back to Hindostan, through a continuous chain of human beings affected with their dejecta."

In 1881, Wilson, of Philadelphia, says of typhoid fever, "Without doubt the fever-producing principle is an organic germ, a *contagium vivum*, and is invariably derived from a previous case of enteric fever."

That cholera is spread by human intercourse is so well established as not to need elaboration, but you will pardon one or two brief quotations. Macnamara also states in his discussions that "the more explicit the examination, the clearer the fact appears that the disease (cholera), in the majority of cases, spreads from one human being to another by means of the cholera fomes find-

ing its way into the drinking water and thus into the intestines of other people."

"I by no means deny," says Pettenkoffer, "the transmissibility of cholera by means of man coming from an infected place. I consider man alone as the specific cause outside of the influence of the infected locality; moreover, I consider him the propagator of cholera, when he comes from a place where the germ of the disease already exists."

What is said of cholera, we believe, upon investigation, will prove true of scarlatina, diphtheria, small-pox, and tuberculosis. We have ample proof that these diseases had their origin in the Old World, and were in all probability spread only through human intercourse.

Diphtheria was first brought to this country through European shipping, and made its first appearance in Boston in 1735. "From thence it extended westward over the British colonies, reaching the Hudson and New York in two years, and after a time leaped over the barrier of the river. It gradually disappeared, attracting no further attention, except as a historical fact, noted by Douglas, Bard, Colden, and others."

Scarlet fever also had its origin in the Old World, and in its spread has been subject to the same laws regarding human intercourse as the other diseases mentioned. Again, tuberculosis, although known to the inhabitants of every clime, undoubtedly spread like cholera, syphilis, and diphtheria, from the thickly-populated centres of the Old World, and is spread only, directly or indirectly, from animal to animal, or from man to man. That up to a few years ago there were isolated spots on the earth's surface that its virus had not penetrated, is rendered possible by the statement of Gibon, in the "Annual" for 1890. He says, "According to Certes, there are no pathogenic microbes to be found at Cape Horn. The Fuegians did not know anything about small-pox, measles, scarlet fever, or diphtheria before the inroads of civilized nations. Prior to the visits of the missionaries even pulmonary phthisis was unknown, and tuberculosis only began to establish itself in that country since 1881." It is said of the North American Indian that, prior to the discovery of America by Europeans, he was entirely exempt from the pestilential diseases. He had, in his primitive state, no ailments, so far as we can ascertain, except such as were incident to exposure and old age. The gold-hunters are said to have introduced small-pox into

Mexico, and the adventurers from the Old World brought with them the eruptive fevers and loathsome contagious diseases of vice and immorality which are now found upon the islands and continent of North America.

A French writer is authority for the following statement: "A soldier returned home consumptive, after undergoing confinement in a Prussian military prison. Previous to his return no one in the village had for many years suffered from consumption. He expectorated freely, and it was observed that the fowls swallowed the expectorated matter. These fowls were given to a woman in the village, who was in perfect health, and in the course of four months she consumed sixteen of them. She had no direct communication with the patient, but after a time became consumptive. One of the fowls was killed and examined, and tubercle was found in the liver and other organs."

Again, it is said of cholera that the germs cannot retain their virulency long outside of human tissue. Thus, Pollock found that after each invasion or epidemic the germs died out, and with each recurrence there was a new importation of germs. This would account for the disappearance of the disease in this country after the epidemics which have several times visited us.

That this is true of diphtheria, scarlatina, and small-pox, remains to be proven, but would appear probable from what has been said of the first epidemic of diphtheria in this country. That the germs must have lost their disease-producing qualities appears from the fact that the inhabitants were free from the disease from 1735 to 1835, a period of about one century.

This disappearance of the disease-germ, unless a fresh supply is received from human tissue, would seem to be in accordance with a law of the animal and microscopic world, that neither can exist long in the presence of the poisons of its own excretions. Thus we find in the overcrowding of human beings in jails, barracks, and camping-grounds, unless protected, they soon die of diseases produced by their own emanations. So the bacteria cannot long survive in the poisons which result from their presence in large numbers.

If, then, every case of a contagious and infectious disease has its origin in a previous case, and is spread directly or indirectly through human intercourse, and the germs of these diseases die unless reinforced from animal tissue, it is certainly fair to assume that if all the disease-producing organisms could be

prevented from attacking animal tissue, it would not be long before the virulent germs would have to return to their primitive dormant state for want of nutritive pabulum, and then would the declaration of Pasteur be verified, "That it is within the power of man to cause the parasitical diseases to disappear from the world."

If the principles here laid down are accepted as a working hypothesis, the destruction of the virulent bacteria by isolation, quarantine, and disinfection, must form the basis of our efforts to prevent the spread of contagious and infectious diseases. It is true that these are the means usually employed, but it is well for us to remember that all medical writers are not in accord on this subject.

Pettenkoffer, who has given us an extended array of works on cholera, says, "Too much importance has been given to bacteria as an etiological factor in the spread of cholera, and that the importance of local conditions has been overlooked." He tried to prove his position by taking into his system the cholera bacillus; the cholera bacilli were found in his stools for eight or nine days after ingestion, but his health was not seriously affected. He is also strongly oppose to quarantine, and says that the spread of the cholera germ is not to be prevented, either in India or outside of it, by isolation, quarantine, disinfection, etc. He further says, "Just as in spite of custom houses, goods are still smuggled over the frontiers, so the bacteria and viruses will be smuggled through all our barriers." He regards the millions expended in hunting down the germs as wasted effort, and that it should be diverted to the work of making people and places immune. But notwithstanding the opinion of this eminent author, the fact remains, that, while no amount of overcrowding or filth will originate the disease *de novo*, the water and food-supply once contaminated, and all classes allowed to mingle, so few places have been found to be immune, and so few persons so insusceptible to cholera germ as Pettenkoffer in this instance proved to be, as to make it very unsafe to follow his advice. I have cited this authority more to show how easy it is for eminent men to give adverse views concerning precautionary measures which sanitarians of equal eminence, after a long struggle, have barely succeeded in establishing.

The importance of isolation has long been recognized. A century ago Naples fined and even imprisoned her physicians for

failing to report to the authorities cases of tuberculosis, the result being a reduction in the mortality from this disease of 90 per cent., and despite the fact that at a later period these measures were abandoned, under the impression that this disease was not contagious, recent experience argues that isolation affords the only practical solution of the question of how to prevent the spread of this most fatal of all maladies.

It is said of England that, within the past few years, through improved hygienic conditions and isolation of tuberculous patients, the mortality has been reduced 50 per cent.

Philadelphia, during the past eight years, has reduced her mortality from phthisis 20 per cent. California, in view of the fact that it is rapidly becoming the great sanitarium for these unfortunates, is seriously considering the importance of the isolation of phthisical patients in order to prevent the spread of the disease.

I need not quote authority to convince you of the importance of this measure in the prevention and spread of diphtheria, scarlet fever, and the other contagious diseases, which we are called upon to treat.

A question of more practical importance is, What are we doing to prevent the spread of disease? Our answer is nothing compared to what ought to be done. I would not for a moment disparage the work of our State board of health, or the efforts of our local boards. They are probably doing all in their power, considering the means at their disposal, and the niggardly policy of our legislature by which they are handicapped. But I am convinced that nothing worthy of the effort will be accomplished until every person and animal threatened with, or sick of, a contagious disease can be isolated and thorough disinfection practised under the care and direction of a competent bacteriologist. In other words, we will never be successful in our efforts to stamp out the contagious and infectious diseases until a competent bacteriologist is employed to take charge of each case in its incipient stages, and empowered by the State to take such measures as shall completely protect the well from the dangers of contamination. If, as we have argued, a virulent disease-germ is abroad and cannot be destroyed so long as it can find a favorable soil for propagation in human or animal tissue, anything short of complete isolation will be wasted effort.

So far we have said nothing of what is being done by in-

oculation to render persons immune, or prevent the spread of disease.

If we were to judge of the value of this method of preventive treatment by the newspaper notoriety antitoxine has received, it would indeed be a great boon to humanity; but, as you know, the results thus far have been disappointing to the medical profession, and even if man could be rendered immune, the exceptions would be so numerous as to make it unsafe to depend on that alone.

Much of late has been said of increased vital resistance as a preventive against the invasion of virulent micro-organisms.

In those predisposed to tuberculosis, this is undoubtedly an important factor. But in cholera, small-pox, diphtheria, syphilis, and scarlet fever, comparatively healthy persons are attacked, and if nothing in the physical condition or hygienic surroundings of the human family at the present day can produce the disease without the specific germ, as it has come down to us through propagation in human tissue, vital resistance would be of secondary importance compared to isolation, disinfection, quarantine, etc. In other words, if these measures are faithfully carried out, there would soon be no germs to attack even tissue of lowered vital resistance, unless the conditions of the Old World by which they were first aroused from their dormant state were recurrent. The results attained by vaccination in small-pox would seem to encourage a trial of this method of preventive treatment in other diseases, but we must not forget that while vaccination was a great discovery, and has done much to prevent the spread of small-pox, we are also very largely indebted to isolation, quarantine, and disinfection, for the immunity we enjoy from this disease. Indeed, I believe it is fair to assume that had it not been for the increased immunity made possible only by isolation and quarantine, mankind would have long ago lost confidence in the protective power of vaccination, and abandoned it as a useless procedure.

That there are almost insurmountable difficulties in the way of carrying out the measure proposed for the prevention of the spread of disease we frankly admit, but, nevertheless, the fact confronts us, that unless we can prove the correctness of our theories by the results obtained, the laity will soon lose confidence in our teachings, and refuse to co-operate in our work, and what has been regarded as the greatest discovery of the age—the

transmission of disease through micro-organisms—may pass into oblivion, because of the stupidity of the laity and the want of faithful, persistent, courageous effort on the part of sanitarians and the medical profession.

A summary of our "thoughts" then is :

(1) That non-virulent microbes exist in all parts of the habitable globe.

(2) That they were made disease-producing in the case of cholera, small-pox, syphilis, diphtheria, and tuberculosis in the thickly populated centres of the Old World through overcrowding, and bad hygienic conditions, such as have never been known to us.

(3) That the virus is always derived from a previous case, and is spread, either directly or indirectly, through human intercourse.

(4) That increased vital resistance renders persons immune only in exceptional instances, and in tuberculosis.

(5) That if virulent bacteria could be prevented from finding a lodgement in human tissue, they would, for want of nutritive pabulum, soon return to their primitive dormant state.

(6) That isolation, quarantine, and disinfection, under the direction of bacteriologists, are the only means by which we may hope to successfully prevent the spread of contagious and infectious diseases.

The Right to be Well Born.

BY O. EDWARD JANNEY, M.D.,

Baltimore, Md.



IT is written in that immortal instrument, the Declaration of Independence, that mankind has an inalienable right to life, liberty, and the pursuit of happiness.

These rights all authorities should observe, and it should be the aim of society and government to secure them to the people. When we study health statistics, we discover that one-fourth of the children born die before they reach the end of

the first year, many of them being dead at birth, and one-half of those born die before they reach the age of 5 years. One-half of the human race, then, fail to secure the right to life. Again, it comes to the knowledge of the physician that many children are born sickly, scrofulous, ill-nourished, deformed, imbecile. Such as these are deprived of liberty,—the liberty to move about freely, to obtain a good education, to choose an occupation, except in a limited sense,—to become, in fine, valuable citizens. From the same causes their pursuit of happiness is interfered with. Some of the causes of immature or ill-conditioned birth are social, as, for instance, overcrowding in tenements, unrestricted immigration, inadequate wages, although into some of these the sanitary element enters; but it is to the medical aspect that attention is now directed.

A gentleman once said, "I am 60 years old, with good health, yet have used liquor in moderation since boyhood. I don't see that it has injured me a particle." Apparently he is correct in this statement, but let us investigate. One of his children, the eldest, a young lady of 21, has always been nervous, but otherwise has had fair health. The second, a boy of 17, is irritable, nervous, frail,—as different as possible from his more robust father. The third child, a girl of 14, is a nervous wreck, far from bright mentally, and a subject of epilepsy. No, the father has not apparently suffered from his continued "moderate" use of liquor, but look at the effect upon his offspring! This illustration may serve to draw attention to one of the evils that bear with severity upon the unborn child and affect its prospects. It only hints, however, at what is a very serious and widespread evil. The *London Globe* says, "According to M. Shervin, in a recent paper, the low death-rate in France is largely due to prodigality in Paris and thrift in the provinces. M. Rochard, however, ascribes it mainly to alcoholism, the annual consumption of alcohol having enormously increased of late years in France. Paris has a wine-shop for every three houses." The evil results to childhood which follow the use of intoxicating liquor by parents may be remedied in great part if physicians would cease their useless and dangerous prescription of alcoholic preparations in diseased conditions, and also cease to use alcoholics themselves, thus adding to precept the telling influence of example.

But there is another danger threatening the unborn. It arises from the marriage of the physically and mentally unfit. A

young man and woman may marry if they love each other, and their union may be a perfect one even if they were penniless when they began their home, but not if they were poverty-stricken in health. A great part of the fatality and wretchedness in infancy is caused, as we know, by the marriage of the tuberculous, the syphilitic, the hysterical, the mentally unsound. It is now well proved that when a man has had a venereal disease, even gonorrhœa, he never fully recovers, but carries for years, perhaps, through his life, the power to transmit the disease. It is also clearly demonstrated that this is the cause of a large proportion of the diseases of women which produce serious local disorder, and often require dangerous operative procedures. When tubes, ovaries, and uterus are inflamed and bathed in pus the cradle of the race is not in condition to produce a healthy child. In view, therefore, of the physical and mental suffering to wives and children—a suffering amounting often to torture—that is thus produced, physicians should assume, and firmly and courageously maintain, a position of opposition to the marriage of a man who has ever suffered from a disease of impurity. Should this attitude be understood and supported by the public, it would go a long way towards solving the vexed problem of social vice.

Another of the inherent rights of a child is the possession of loving parents. Mutual affection is the only sufficient reason for marriage. When people marry each other for money, or support, or convenience, or passing fancy, or other unworthy reason, their child is defrauded, and this is shown in its constitution or lack of constitution. Man may be easily deceived, but nature never. One need not expect the children of loveless marriages to be as perfect as those in which the parents are joined in that holy union which results only from love. Nor will those so united, and living on a high plane of thought and endeavor, allow a selfish and cruel perversion, within the marriage bond, of a function intended for the propagation of the race. A child born of those who give rein to the animal within them will all his life have to struggle against evil propensities which were placed in his nature before birth. To so burden a human being is the acme of selfish indulgence, and it would seem to be the duty of physicians to avert this danger from the unborn children of the future.

It has been said that the physician's highest duty is to heal the sick. There is still a higher duty,—to prevent sickness. From this point of view it is the noble privilege of the physician to use

his mighty influence in the directions indicated. This will require unselfishness combined with a high degree of moral courage,—both of which qualities the true physician possesses. Were he to exert this influence thus wisely, bravely, and with the well-being of those yet unborn in mind, much of the slaughter of the innocents that goes on would cease, and the right to be well born would in part be established.

Which Animal has the more “Common Sense,” Man or Beast?—A Plea for more Moderate Living.¹

BY GEO. A. EDWARDS, M.D.,

Syracuse, N. Y.



OR what is man living? In the scale of being he is supreme; endowed in the highest degree with the wonderful power of reason,—intellectuality,—and clothed with responsibilities affecting nothing less than the future of the human race. In view of this, I assume it to be fit and proper to interrogate after such manner.

For what are *you* living? Stop, for a moment, the average, practical man of to-day, no matter what his profession, trade, or calling, with this query. After a little confused reflection, he will very likely exclaim, “I’m blessed if I can tell; I believe I know less and less every day I live; haven’t accomplished anything of moment thus far in life, and the issue of all my present aims and undertakings is uncertain; I reckon, sir, I’m just about a total failure.”

Yet, this man is fairly well educated, bright, and intelligent, a hard worker, enjoys some of what he terms pleasures and comforts, presents a good appearance, and is deemed, as the world goes, quite successful.

Pressed further and more closely for a true and thoughtful response to the question, and he will finally admit that he is living and laboring for the *means* which will enable him to satisfy his desires.

¹ Read before the Academy of Medicine, at Syracuse, N. Y., May 21, 1895. From the Journal of the American Medical Association.

Living and laboring to satisfy his desires ! And they are very many. Goaded by the "spirit of the times," with all its evil fashions, customs, and habits ; a loose rein, perhaps, on his appetites and passions ; poisoned by selfishness, and envious of his more prosperous neighbor, he rushes on in the struggle to win the empty prize of a false ambition, reckless of self and his dependents, with only delusive hope to cheer him on his way. And so this life continues to the end. Few achieve the goal of their longings, and if so, at what cost,—with all their capacity for enjoyment gone !

How did Heaven ordain man should pass his allotted time on earth ; what daily plan decree ? With all reverence, perchance some such scheme as this : Work, alternating with rest, and recreation through innocent and beneficial amusements ; regularity in habit of both mind and body ; moderation in all things ; "friendships, content, progressive virtue, and approving conscience."

Is this an extravagant and ideal design for man's temporal sojourn ? No ; experience teaches its practicability, truthfulness, and value ; "common sense" will endorse it ; reason, surely, should commend and proclaim it.

But does the boasted civilization and enlightenment of this almost the dawn of the twentieth century of our Christian era preclude any approach to such an even-tempered, sensible existence ? Alas ! it seems too true. And must we roll back "the tide of years to the life led by primeval ages," or, bitter humiliation, look down in the scale of creation for an example of a well-regulated life ? Let us see.

It has been well and truly said that we are living in the age of electricity,—the synonyme of all that is intense and rapid in mental and physical activity. The "vital spark" has, indeed, enabled us to "girdle the earth in forty minutes," a prophecy more than fulfilled. The sea and land may pay tribute to commerce. Giant strides are being made in most of the arts and sciences. The genius of invention and discovery, twin offspring of supreme creative power, is gradually subduing the earth to man's domain and will. In the fine arts, painting and sculpture are transforming all animate life into imperishable images of striking naturalness.

And the art divine, music, "born with the morning stars," man's solace and charm, seeks to soon complete her tender sway by bringing all the flying discords into tune.

Wherefore all this intellectual activity and progress? Oh, it is simply an index of human development, the higher civilization of the times! But how does it profit man's physical well-being? To become a factor in such an economy of existence, must he sacrifice health, long life, and entail his infirmities upon successive generations? Let us particularize for a moment.

The merchant, or, it may be, the manufacturer, with inordinate selfishness and greed, anxious to outstrip his neighbor, and assuming upon ill-advised conditions great financial responsibility, we frequently see mourning over his losses and with blanched countenance tossing upon his pillow the livelong night from the spectre of a large note due on the morrow, with no money in the till to meet it. All this followed by loss of appetite, indigestion, and probably a fit of nervous prostration.

The banker or broker is ever lost in the whirl and din of the exchanges until he is, or wellnigh, a fit subject for the mad-house, asylum for paretics, or a victim to apoplexy.

The traditional artist, chained to poverty, struggling after reputation, often faints, ever suffers, and betimes dies by the way-side.

Your statesman, possibly, reaches the topmost round in the ladder of fame, but at great expense, certainly, to his moral sense, from the practice of strange political methods for advancement, and finally exclaims, "It's a bauble; emptiness!"

And to think of our favorite hero of a hundred battles (to borrow a subject from the early part of the century), dying in humiliating banishment, and with distressing disease, at the early age of 52 years, and in his last moments weeping that he can make no more crimson history!

Emperors and kings have become victims to the festive board alone.

What volumes of sad comment these few illustrations suggest, bearing so closely upon the health, happiness, and longevity of mankind, and that may be justly charged to our supercivilized methods of living.

Why, there seems an insidious contagion abroad in the land, and to which we are all more or less susceptible, and which tends to stimulate humanity towards a brief lurid existence, crowded with work and worry and inordinately spiced with luxurious dissipation, as contrasted with a quiet, temperate, useful life, filled with happiness and content, and rounded by a green old age with its soul-satisfying retrospection.

In this mad rush made by man after success, whatever this term may mean,—riches, fame, or what not,—he can spare, strange to relate, no time to look after or care for what to him is of the utmost importance,—his *physical condition*.

There is no methodical season for rest and refreshment of the body, so necessary to sustain its normal vital energy, and to the numberless ills which will ever supervene upon such a continuous round of labor and excitement he gives very little consideration. And yet man is such a *rational* being.

Sleep, the necessary factor in the recuperation of the nervous system, is crowded out, virtually repelled, by business and professional engagements after working hours, innocent (?) amusements, social requirements, until exhausted nature rebels, and many times issues her alarmingly peremptory orders. But man is an *intellectual* being !

Man eats when he is hungry, or not hungry, any time, day and night, and what? Not always *simple, plain, nourishing* food! Drinks when he is thirsty or not thirsty (especially on invitation), at all hours, and what? *Not always water!* Then there is that vile weed, tobacco; why, a brute will suffer death rather than receive it in any form, and yet man apparently cannot do without it.

Oh, how wonderfully constructed, beautiful, and valuable are man's reasoning faculties; "to know the right and still the wrong pursue!"

So with all man's superior (?) intelligence, by indulgence in food and drink, with utter disregard as to quality, quantity, or regularity, together with a continuous deprivation of sleep in proper season, and sensible out-door recreation, is it small wonder that he suffers from such diseases, some one or all, at different times, as troubles with the digestive tract,—dyspepsia, indigestion, bilious conditions, diarrhœa, constipation, hæmorrhoids, the various neuroses, neuralgia, pneumonia, rheumatism, gout, lithæmia, alcoholism, the baneful effects of tobacco, impairment of the senses, especially vision, and, indirectly or secondarily, affections of the kidney, particularly Bright's, diabetes, and degenerative changes in other important organs, the circulatory and nervous systems.

Now, strictly speaking, most of the common and prevalent diseases affecting man, and this is quite true of the brute creation, should occur, if at all, from accidental causes,—that is, the ac-

quisition thereof be due to conditions he is ignorant of at the time or beyond his control. He would then be an innocent sufferer deserving of some sympathy like his fellow, the brute, under similar circumstances, and secure and guiltless of the charge herein made.

Hence the statement can safely be made as a fact, which I believe will be very generally acknowledged, certainly by physicians, that the diseases above mentioned, in a great measure at least, are acquired by man through faulty practices and methods of living, or no method at all, and consequently by the non-exhibition of his reasoning faculties, to say nothing of the exercise of "common sense," supposed to be possessed by all humans.

Moreover, if the truth of this premise be recognized, all disease contracted under known conditions and circumstances is preventable. And so it follows that man himself virtually becomes the author of all the miseries of much of his own ill health and often the crime of untimely death; his own executioner, as it were. Ignoble being! for such he proves himself, representing a human paradox! in significant contradistinction to the "equine paradox," of which we have all heard, if not seen, and fulfilling the truthfulness of the common expression that "man is his own worst enemy."

At the expense of a little digression, perhaps, may not the question be here well put, if it is not just as plainly injurious and suicidal for the well-to-do gentleman to overwork, or do none, overeat and undersleep, with the sure result of fatal disease following sooner or later, as it is for the poorly paid laboring man having, perhaps, a large dependent family, to seek the only relief and oblivion from his troubles and hopelessness in the flowing bowl of the dramshop, with the sequence of alcoholism, the almshouse, and death? The manner of acquiring disease and courting death may not be quite so dignified and honorable in the one case as the other; but there is a similarity to the final issue, and about the same small amount of good sense displayed in each.

The question naturally arises, Why does not man, when the principles and practice upon which health and life depend are so plainly obvious, exercise his faculties to secure the desired result? Are the reasoning powers at fault? "Common sense," at all events, would seem to be sufficient to teach him the proper course to pursue, and he ought to have a little of this in his make-up.

After all, this incongruous element to man's mental equipoise

may possibly be accounted for on the supposition that originally and at best he is provided with very little "common sense," but being easily susceptible to vast quantities of knowledge and nineteenth century wisdom, he rapidly becomes the educated fool,—the worst of all fools. The latter, we know, always turn to excesses and die young.

Let us now turn for a moment to examine the beast, its chief characteristics, and habits of life.

Physically there is no essential difference between man and the brute creation. Bone, sinew, muscular and nerve tissues, if examined macroscopically or microscopically, are found to be identical. The vital organs and senses are the same, perform the same functions, and serve similar purposes. Resolved into its ultimate elements, we find the same food-sustaining life in the beast as in man; and under like conditions of causation, most of the diseases affecting the two or three higher orders of animals under consideration present the same clinical features.

Now, the beast, unless inhumanly interfered with and maltreated by man, is proverbially healthy (always excepting accidental disease) and lives its allotted time. To be sure, the beast leads a somewhat more out-door existence, and hence gets the benefit of more pure air and sunshine. But man, I take it, has an equal privilege to appropriate more of these life-giving attributes, and would, if he had enough "common sense" to take advantage of it.

In truth, I know of but one reason why man should not be as healthy and long-lived as the brute. It is this: civilization compels him to wear clothes! That he is immensely handicapped by this specialty I will freely admit. Yet, even with this great drawback, I shall still assert he has a fair chance to attain and preserve the strength of true physical manhood. Perhaps many of you do not realize what a curse clothing is to man. I mean as regards his physical well-being. And for the benefit of those who possibly have never investigated this subject, I will relate in brief the experience of the missionaries Sterling and Bridges, men who have had much to do with civilizing and christianizing the natural product of the *genus homo* in far-off and almost unknown lands. It will serve to illustrate the point I wish to make, and maybe strengthen the seemingly audacious statement just made.

In 1869, Rev. W. H. Sterling, now a resident of Buenos

Ayres, and bishop of the Church of England for South America, established a mission with the Yahgans, a large, healthy, and powerful tribe of native Indians inhabiting one of the islands near Cape Horn. He selected for his residence and labors Ushuaia Bay, a tiny settlement on the narrow channel which bounds Terra-del-Fuego on the south. Mr. Sterling subsequently returned to England to be ordained in the episcopate, and in 1870 his work at Ushuaia was resumed by the Rev. Thomas Bridges and wife, who still live at this little place, on the shores of Beagle Channel.

It is from the latter's experience I quote chiefly: "A tribe of Indians that lived naked in a climate where snow-storms raged in every month of the year, was to be transformed into a community of farmers. A people who had in all their wonderful language of 40,000 words no term or idea of God or a future existence, were to be taught and christianized. Instruction began. The Yahgans who would work were given food. Navy bread for breakfast, meat-stew and hard-tack for dinner, hard-tack for supper, with refreshing drinks of milk and water slightly thickened with flour and sweetened. Clothing was also supplied them as fast as the mission was able." This work continued regularly, and finally, in 1881, eleven years after Mr. Bridges began his work, "in spite of sterile soil, such progress had been made that the mission reported a Christian village, with cottages instead of wigwams, and an extemporized church in the midst. Much ground had been cultivated, and cattle, sheep, and goats had been introduced. Moreover, every Yahgan wore clothes. Great was the change at Ushuaia Bay.

"The missionaries had some 'significant contrast' photographs taken, and they were reproduced in an English magazine. But a more marvellous change than anything photographed was even then in progress. The natives began to get sick. Then they died. The race had been hardy and vigorous. They had actually increased in numbers while living naked and smeared with grease from head to foot. But when put to work as farm laborers, and washed and clothed like white folks, they complained of being 'tired and sore,' and they had to be nagged into working steadily. They had slept in the freezing rain, but now, if they sat down in their shirt-sleeves while at work, they caught cold that developed into fatal disease. Consumption and pneumonia appeared and assumed frightful aspects. Little chil-

dren that had been round-limbed and bright-eyed when naked in a canoe were wasting rapidly away in excessive languor, though clothed in woollens and living in a warm house. They continued to waste and die, and from that day to this, not one child, in dozens born, has survived its first year! Of a tribe 3000 strong, healthy, hearty, and happy, fewer than 300 can now be found.” . . . But I spare you, and will not press the moral of all this.

Passing on and to resume the argument, suppose we inquire if the brute really does possess “common sense;” that sense or faculty, which is recognized as the simplest action of the brain, the organ of the mind; in other words, we will say the lowest grade of reasoning power.

We have all seen, if we ourselves cannot exercise a similar function, exhibitions of good, common, or “horse sense,” as the expression goes, and no one, I fancy, will wish to deny this distinguishing characteristic to that noble animal of the *genus equus*.

Some may still say that the beast is governed by instinct. I do not know how most comparative physiologists of the present day speak on this subject, but it seems difficult to conceive how such a term can be justly used to express the power of comprehension so frequently manifested in the brute.

Even in the apparent automatism of lower forms of life, an occasional flash of intelligence is easily discerned, and as we rise in the scale of being, and witness in the brute creation positive evidence of the international adaptation of means to ends,—the offspring of thought, we must here acknowledge reason as the governing and controlling power.

Professor Huxley goes further, and, in summing up on this subject, says (and I need not quote higher authority, if it were possible to do so), “I have endeavored to show that no elaborate structural line of demarcation can be drawn between the animal world (brute creation) and ourselves; and I may add the expression of my belief that the attempt to draw a psychical distinction is equally futile, and that even the highest faculties of feeling and intellect begin to germinate in the lower forms of life.”

On the whole, we may safely declare every living thing to be endowed with sufficient intelligence to direct its individual efforts towards doing and obtaining what is needful for its safety and best physical good.

In all the varied forms of life on this great earth, each and

every creature, with one exception, makes use of this priceless gift for the purpose just indicated. Why the "crowning work of creation" is the exception is an unsolved problem.

Now, if we are quite ready at this time to grant the brute even common sense, does he exercise it?

In the daily contact with our best friends, the animals (brute creation), how often is one seen to suffer from any ill-effects whatever from overeating? Very, very seldom. And many animals enjoy gormandizing as well as man. There must be some simple secret to account for their invariable escape from the "seven devils" of dyspepsia and indigestion. Can it be plainness of diet? If so, man will do well to make a note of this. I cannot say precisely what the effect would be on the most sturdy specimen selected from among our dumb fellow-creatures; if it were senseless enough to indulge night after night in a bill of fare consisting of ham sandwiches, lobster salad, scalloped oysters, cake, candy, pickles, ice cream, strong coffee, champagne, etc., and all in addition to its daily allowance of customary food and drink; but think it would "fetch 'em—the gripes," sure and quick enough.

Why, the incomprehensible, indestructible digestion of "McClusky's goat" (that much-abused animal) would, I believe, be somewhat disordered by frequent repetitions of such a festive *menu*. But the brute creation does not commit such crimes against itself.

Again, did you ever see a beast that did not know enough to prepare and go to rest and sleep at nightfall, if it were allowed to do so? I pause for a challenge to this assertion. Oh, ye creatures of superior intellectual capacity, canst thou gather no moral from this?

As might be expected, animals with such regular and exemplary habits in eating, drinking, and sleeping are seldom sick. Indeed, very rarely, I believe, unless by accident or ill-treatment.

What an amusing innovation it would be to learn that your horse had an attack of acute dyspepsia! Is it very common to hear of a cow suffering with nervous prostration? A dog with rheumatism? A sheep with diarrhœa? And did anybody ever see a cat, no matter of what age and in any emergency of its feline life, when it was thought to be in great need of spectacles?

We might press the inquiry on this line much further, and endeavor to seek in creatures so clearly allied to us the diseases

commonly affecting ourselves, but I am very certain the effort would be quite barren of results.

In the condition thus revealed of man by contrast with his fellow-creatures, proud as he ever is of being chiefest in this world of life, would it be too humiliating for him to admit that he might gather lessons of much value to his physical happiness and well-being from the plain and simple habits of a lower order of animals?

And what, if any, are the axioms to be deduced from the argument, and which man should keep ever near to his counsel, if he would retain his health and be long-lived? They are, seemingly, self-evident; he should live frugally, avoid intoxicants, seek sufficient rest and sleep at the proper time, and the more pure air and sunshine he can expose himself to the better.

Furthermore, and to repeat a little old and true philosophy, he should remember and take warning, that even to be able to exercise good "common sense," he must have a healthy body. That "haste makes waste." That wealth begets luxury, luxury begets idleness, and idleness breeds crime. And, finally, that there is no ambition worthy to be cherished, which leads him away from a conscientious duty he owes to himself, his fellow-man, and his Maker.

With your kind indulgence, I have conducted both sides of the argument of this discourse (if it can be dignified by such a title) in a simple (I am not bold enough to say humorous) yet truthful way, and shall ask still further for the extraordinary privilege of acting the part of judge as well as of advocate in the controversy. So, if appealed to for an opinion on the merits of the question as stated at the outset, "which animal has the more common sense, man or beast," I must, in view of the preponderancy of evidence herein offered, in the shape of a formidable array of facts, and of which we are all, perhaps, too familiar, decide in favor of the brute.

Still, I believe there is hope for man, if he has not much "common sense;" and trust the startling revelation you have so meekly and patiently listened to will cause no one to despair of his own condition, or think that the future promises less for the nobility of true physical manhood. For, in the language of another, we may be consoled by the reflection that "there is still a vast gulf between civilized man and the brute." "The power of knowledge; the marvellous endowment of intelligible and

rational speech ; the conscience of good and evil ; the pitiful tenderness of human affections ; raise us out of all real fellowship with them, as a mountain-top, far above our fellow-beings, and transfigured from our grosser nature by reflecting here and there a ray from the infinite Source of all Truth.'"

Legislation versus Indiscriminate Expectoration.¹

BY WILLIAM G. BISSELL, M.D.,

Bacteriologist, Department of Health, Buffalo, N. Y.

IT has only been comparatively within the past few years that medical men have known the definite means by which consumption can be prevented. Scientific men the world over have worked on the subject, and fortunately the time has arrived when the laity begin to realize the possibility of lessening the amount of the disease and are seeking information as to how it can be accomplished. When Robert Koch, some thirteen years ago, claimed that he had discovered the germ of tuberculosis, he was looked upon somewhat as a theorist ; but the ultimate, practical results due to that discovery will undoubtedly amount to as much towards the prevention of consumption as Jenner's vaccination has towards the elimination of small-pox.

The view that tuberculosis is an infectious disease, or rather, let us say, a communicable disease, has gradually pervaded the profession, until to-day the statement may be made that *it is* a communicable disease with little fear of controversy.

The first statement is, then, that consumption is an infectious, communicable disease.

The second statement, the one that would naturally follow, is that the specific source of this infection, the cause of the disease, is a germ, and it is this germ alone that can cause consumption.

Without the passage of this specific germ into the body, without the transmission of this particular germ in some way or

¹ Read before the Buffalo Society of Natural Sciences, October 25, 1895. From the New York Medical Journal.

another in a living condition from the sick to those open to such infection, consumption cannot develop, therefore cannot spread.

The disease, then, can be prevented in one way by any means which prevents the germ entering the body.

(1) As to how this can be accomplished, a knowledge of the germ and its nature will help answer.

The germ of consumption is different from all other germs in that its growth is very slow, requiring weeks or even months for full development. It requires a special temperature for growth,—namely, between 99° and 102° F.,—and also cannot grow without a requisite amount of moisture.

While these points are true, it possesses a still greater peculiarity—namely, that it can live a great length of time—weeks, months, or even years—in a dried condition.

While heat and sunlight are destructive to the organism, drying has little effect, and it is at this point that a third statement may be made,—that is, the germ, the source of infection of consumption, passes out from man by the sputum, and it is this dried sputum that furnishes the greatest source of danger.

Do not understand me as stating that this is the only way by which tuberculosis can be transmitted, for it is not ; but it is the most common means by which pulmonary tuberculosis, commonly known to the laity as consumption, is transmitted.

It is impossible for any germ to leave a moist surface and be carried off by currents of air, and for this reason the breath of consumptives is harmless in that it does not contain the germ.

The point is now suggested, In what way are the practical results to be accomplished? Certainly not by the use of the poison tuberculin, which at one time created such a stir and has since been so thoroughly condemned. Yes, to a certain extent by that means,—that is, by the tuberculin test for the detection of tuberculosis in cattle,—but furthermore by any means by which the presence of tuberculosis, of which consumption is a form, can be detected.

If the existence of consumption in a certain individual is known, and if that individual is conscientious and exercises proper precautions (which are not harassing or painstaking), there is no reason why consumption should be given to a single other person.

It is not an hereditary disease, and always must arise from some source previously infected, and it is in reference to a most common

means of furnishing infected sources that I wish to lay stress to-night,—that is, the vile habit of expectorating on the floors of street-cars, public buildings, and similar places.

(2) A short time ago the Buffalo Railway Company adopted a rule looking to the prevention of expectoration on the floors of their cars. There was placed in each car a sign reading to the effect that "Spitting on the Floor of this Car is Positively Forbidden," and the result of the display of these signs was the lessening, to a small degree, of the expectoration on the floors of the cars. The move was one in the right direction and should be highly commended; but company rules of this nature are difficult to enforce without stronger legislation back of them, and some measure should be adopted to aid the company in its efforts towards better street-car sanitation.

Where is there a more common place for the spreading of such infection than the floors of street-cars? The sputum becomes dried, mixed with dust, and is easily disseminated by currents of air, and is either inhaled or swallowed, and it is reasonable to suppose that several of the 500 persons reported to the department of health as having died from consumption last year received their primary infection from this source.

During the year 1894 over 42,500,000 passengers were carried in some 2700 cars by the Buffalo Street Railway Company, and one can appreciate by this number the very considerable amount of dried expectoration that must necessarily have been inhaled.

Take, for instance, a man returning for the first time to his place of business after having been "laid up" with a severe attack of acute bronchitis. It is fair to suppose that, owing to his still weakened condition, he will resort to the street-cars as a mode of transportation, and must necessarily inhale the air of the car. If this air chances to contain tubercular-infected dust, one can readily imagine the great danger to which he is exposed.

With few exceptions, very little work has been done to practically demonstrate the possibility of street-car sputum infection, calculations having been based on the fact that the tubercle bacillus is usually present in the sputum of consumptives, and undoubtedly among the number that ride on the street-cars annually there are several hundred persons suffering from the disease.

This point has been demonstrated to be a fact, for during the past few months fifty-six microscopical examinations have been

made of selected samples from the floors of cars at the foot of Main Street, and four of these examinations revealed the presence of the germ of consumption.

The question now arises, How can the contamination of cars by tubercular sputum be prevented? In the same manner that contamination of theatres, churches, public buildings, and similar places can be prevented, and that is principally in two ways :

First. By educating the public in general as to the danger of indiscriminate and careless expectoration.

Second. By the passing of a city ordinance prohibiting the expectorating on the floors of cars, public buildings, and similar places.

(3) The medical officer of health at the present time is neither aided by public opinion nor statute in any attempts he may make to stop the propagation of consumption, and, although it is clear to the medical and scientific world that tuberculosis is an infectious or communicable, and not a hereditary, disease, before legislation could possibly be obtained on this subject it is necessary to educate the public at large.

With the object in view of educating the public as to consumption, on the 10th day of June, 1895, the Department of Health in this city mailed the following circular letter to the physicians of the city :

DEPARTMENT OF HEALTH, BUFFALO, N. Y., June 10, 1895.

You are aware that tuberculosis is strictly a contagious disease, and can be prevented, providing the proper sanitary regulations be adopted. Therefore, after June 15, 1895, the Department of Health, in the interest of the public safety, demands that all cases of pulmonary tuberculosis (consumption) occurring in your practice be reported to this office, whereupon a circular of instructions will be sent to the family, or those in charge of such patients, with the object of lessening and preventing the spread of this dire complaint.

Whenever the diagnosis as to the existence of the disease is in doubt, you are most respectfully requested to submit to the bacteriological bureau of this department the sputum of such cases for a bacteriological test, which will be made free of charge. The report of this examination will be sent you by mail.

Yours most respectfully,

ERNEST WENDE, M.D.,
Health Commissioner.

The circular of instructions referred to is as follows :

DEPARTMENT OF HEALTH, BUFFALO, N. Y.—*Information for Consumptives and those Living with them.*—Tuberculosis, commonly known under the names of consumption, decline, scrofula, wasting disease, lupus, and white swelling, is a contagious disease, which means that every new case is contracted from some other case. It is not an inherited disease, nor is it due to "a cold," as once supposed, and these facts furnish the key-note of how to prevent the disease. The cause of tuberculosis is a germ, called the *bacillus tuberculosis*, and the disease is only produced by it. The germ is commonly found in the sputum (spit) of those having consumption, and in the pus (matter) discharged from tubercular sores of all kinds. This tubercular germ finds its way into a healthy person principally in three ways:

- (1) Through the lungs.
- (2) Through the stomach and digestive tract.
- (3) Through open wounds (sores).

(1) *Through the Lungs.*—This is apt to occur when an ordinary pocket-handkerchief is used by a tuberculous person to receive expectoration (spitting),—a filthy and dangerous habit. When such a handkerchief is opened the dried expectoration becomes pulverized and is disseminated through the air, from whence it may be inhaled by others, as well as by the patient himself, who is likely to suffer from drawing the diseased germs into portions of the lung previously unaffected. Another and most common source of pulverized expectoration is derived from the disgusting habit of indiscriminate and careless spitting, as on the floors of street-cars, churches, theatres, large stores, public buildings, etc., and on the ground and sidewalks. The expectoration (spit) becomes dry, mixed with dust, and in this form is carried into the air and blown around, then inhaled into the lungs or swallowed. This spitting habit is dangerous in the extreme, and should not be practised.

(2) *Through the Stomach, etc.*—This occurs generally by consumptives swallowing their own sputum, and by the use of spoons, cups, and other articles of the kind, which have not been properly cleansed after having been used by a tuberculous person or consumptive. Tuberculous meat and milk from tuberculous cows are also a great source of danger, and should not under any circumstances be used.

(3) *Through Open Wounds (Cuts).*—This happens by persons getting tubercular pus (matter) into an open cut or an abrasion on the skin, and is probably the least common of the three usual ways of infection.

During the past ten years Buffalo, with a population of 250,000, has had 5166 deaths reported as from consumption.

The probabilities are that this is by no means the entire number due to that disease, as certificates are not infrequently falsified in order that relatives may obtain insurance, which they otherwise could not were the true cause of death known.

The means of preventing the spread of consumption rests mostly with persons having the disease. If they exercise proper precautions, which are not difficult nor exacting, they can in a great measure avoid giving the disease to others, and yet not be deprived of the society of their friends nor of any of the comforts of life.

Knowing the channels of infection, which have been stated, the necessary precautions can easily be taken.

All sputum (spit) from consumptives should be destroyed, and must not be allowed to become dry. A spitting-cup or flask, containing just enough disinfecting solution (which can be made by adding eight drops of carbolic acid to half a cup of water, or by dissolving a tablet of bichloride of mercury, such as may be procured at any drug-store, in a pint of water) to cover the bottom of the vessel should be used for expectoration. When out of doors a consumptive should use a pocket spitting-flask containing the disinfecting fluid. If this is impossible, a piece of old cotton cloth or water-closet paper should be used to spit into, and such cloth or paper destroyed by fire as soon as possible after using. No piece should be used for more than one expectoration.

Never spit on the floors of street-cars, public buildings, stores, etc., nor on the ground or sidewalks, as such sputum becomes dried, is blown about, and furnishes the source of danger above referred to. There is little danger from the mere breath of a tubercular patient; the danger lies in the dry expectoration, which contains the contagious or infecting germ.

Kissing consumptives is a positive source of infection, and should be guarded against, especially in the case of children. Married people should not sleep together where either is infected. Sleeping in rooms occupied by tuberculous persons is a source of danger, and such rooms should not be used by other persons after having been occupied by consumptives until they have been thoroughly disinfected and all material in them put through the same course. Rooms can practically be disinfected by the use of the fumes of burning sulphur (using three pounds of sulphur to a room ten feet square, and increasing the amount according to the size of the room in proportions of three pounds to each additional thousand cubic feet of air-space), the room during the time being tightly closed, and allowed to remain so for at least twenty-four hours. The wood-work, walls, wooden parts of bedsteads, chairs, etc., should be washed with a solution of bichloride of mercury (the proportions of which have been given above). For bed-springs, etc., a solution of carbolic acid should be used, as mercury will injure the metal.

All dishes, spoons, forks, etc., should be thoroughly washed in boiling water after having been used by a consumptive, and such articles should not be used by any other person in the household until they have been thoroughly boiled.

All meats should be thoroughly cooked, and milk sterilized or boiled, if it is thought to be from a diseased source.

The bedding and clothing used by a consumptive should not be included in the family wash; such articles should be washed separately, and be thoroughly boiled during the process of cleansing.

ERNEST WENDE, *Health Commissioner.*

As to the second point,—that is, legislation on the subject,—nothing has as yet been accomplished, and it is with the object in view of demonstrating the importance for legislation that I give this paper. A movement of this sort needs the hearty

co-operation of every person interested in public health, and until such an ordinance is in existence the spreading of consumption by infected dust from the floors of street-cars, public buildings, and similar places will continue.

After a lengthy discussion of this paper, as to the practicability of legislation prohibiting indiscriminate expectoration, the following resolution was submitted to the society for action :

SOCIETY OF NATURAL SCIENCES, LIBRARY BUILDING,
BUFFALO, October 25, 1895. .

Resolved, That matters pertaining to public health are within the province of this society as a scientific problem for discussion. That it has been demonstrated that dust is a means of spreading contagious diseases, and

That this society requests that the various medical societies of the city be invited to unite in arranging some plan by which contagion from expectoration be abated as a well-known nuisance.

That the board of health be requested to give the matter attention and aid in a suitable statement of this source of danger.

The Causes of Old Age.¹



FEW years ago a pseudo-scientific paragraph was travelling through the public press stating that an Italian physician had succeeded in detecting and cultivating the bacillus of old age,—the cause of senile decay. As a skit at the microbic theories of disease then just achieving the popularity they have since held, it had its day and was soon forgotten ; and one would not wish to revive it except as a reminiscence. It has its suggestions, however, of a theory to account for some of the symptoms of old age that may be not altogether unrelated to the truth, though they are at best merely suggestions, and nothing more.

There is hardly any fact that is constantly before our observation, and yet is more incomprehensible than the reality of decay and death. When Sir Thomas Browne described his life as “a miracle of thirty years” he expressed a truth, but not a greater one than was to be that of his death. Why the animal organism under perfectly normal conditions should be steadily on the upgrade to a certain point, and from there as steadily on the decline

¹ From the Journal of the American Medical Association.

till its final extinction is a question that no one can answer with certainty,—we can only speculate. We can assume, it is true, that the vital heredity of the bioplasm, after a certain reproductive period, is transferred to another generation; that the germ plasm only is immortal, while the organism in general, without this invigorating principle or with it undeveloped or exhausted, naturally and gradually tends to its ultimate decline and death.

According to this theory we would expect gradual decay to begin after the cessation of the active reproductive period, and this falls in very readily with certain physiological facts and also with some therapeutic notions that have had a limited vogue, such, for example, as the comparatively recent one advanced by Brown-Séquard of the benefits from the testicular extract. There are, however, serious objections to the acceptance of the continuity of the germ plasm, and at best it can only be admitted as a rather captivating hypothesis, that may be true but is not a demonstrated scientific fact.

There is another possibility that may be invoked to account for senile decay that is, it is true, partly included in the foregoing, but which may, perhaps, have sufficient importance to stand alone as a factor. Our existence is a perpetual compromise between the contending influences that tend to growth or decay. Bichat defined life as "the sum of the influences that resist death," and many have since thought it would be hard to improve upon this rather circular definition. All our lives we are enveloped in unfavorable conditions; we carry the germs of disease always with us, only waiting for a favorable opportunity, and our system is itself constantly manufacturing and disposing of poisons that are, in themselves, capable of destroying life should by any accident its functions seriously fail in certain important particulars. These functions are constantly becoming disordered, sometimes by external, sometimes by internal agencies, and each time a draft is made upon our stock of vitality. During the period of active growth which in man and some of the higher mammals now covers many years, but which in its origin may have had a close relationship with the cyclic rotation of the seasons, the vital forces, so to speak, are predominant, and the disease-germs and toxins can only exceptionally work disaster. When growth is complete the organism is at its best, but is not progressing, and the inevitable tendency is retrogression sooner or later under the steady and continuous attack of hostile agencies. The "mi-

crobes'' of old age are all the disease-germs that attack vitality, either consciously in actual disease or through the slow and by us almost unfelt sapping of the system in a thousand different ways which they must be constantly effecting at every point of least resistance. It may be, as has been conjectured by some, that every form of neoplasm, every morbid state has here and there its germs latent in the organism, only waiting, as Dr. Clouston has expressed it, for some ebbing of the regulative and resistant cortical energy of the nervous centre to leave them free to start on their distinctive career. This recognizes the supreme influence of the brain over vital processes, the control of all functions by the highest nervous centre, the cortex of the brain, that formed one of the leading motives in Dr. Clouston's valedictory address as president of the Edinburgh Medico-Chirurgical Society, from which the above quoted opinion was taken. Of course, the brain suffers with almost every pathologic process, and according as its functions are impaired with advancing age the more rapidly do the symptoms of senility appear. But, like others of the higher organs, its resisting power is the greater, and in the normal course of events the cerebral cortex should be last to completely succumb to the gradual onset of all the hostile agencies that produce old age. That this is often the case is shown by the numerous septuagenarians and octogenarians who have taken leading parts in the world's progress, and much of the world's best work is done by men past the time when it is generally supposed that brain weight begins to decrease and mentality to be impaired. The truth probably is that most of us grow old too fast, that by our own fault or that of our progenitors we yield too soon to the microbes and toxins that hasten on old age.

Wise Words from a Wise Man.

Said the late Dr. Goodell, who was not only a good physician but a good man, "I dare any political economist to show me one expedient whereby conception can be avoided. I challenge him to name a single preventive which will not do damage either to good health or good morals. Even natural sterility is a curse. Show me a home without children, and ten to one you show me an abode dreary in its loneliness, disturbed by jealousy or estrangement, distasteful from wayward caprice or from unlovable eccentricity."

The Public School, and Its Defects in Relation to Health.¹

BY T. S. WATERS, D.D.S.,

Baltimore, Md.



WILL consider this subject under the following three heads :

(1) The pathologic effects upon the system and the teeth of young ladies from cramming, crowding, and overworking the brain without a proper amount of physical development in the open air to counteract the loss of nervous force. (2) The evil results therefrom, the effect produced upon the future mothers of this great and glorious country. (3) What are we doing as physicians and dentists to counteract this influence, outside of applying remedies to relieve and restore the broken-down subject?

Should we not, as members of the healing art, write and read papers upon this subject, discuss the same, that the public, through the daily press, may be so impressed that public sentiment will cause a reaction in the matter and the heads of our educational institutions be made to halt, and modify their system of teaching which has proven for a quarter of a century so very deleterious to the physical and mental growth of our generation? School crowding and cramming impairs the health and lessens the appetite, which causes imperfect nutrition, bad assimilation of food and of ideas. This, therefore, lessens appropriations of good amounts of food which should consist of a proper amount of phosphates, with lime salts for the growing child, the very want of which retards and impairs the development of the second growth of teeth, of hair, nails, and bones. These crowning beauties are the very evidence of health. On the other hand, consider cramming, crowding, and forcing as they are practised in school-life, especially in the high-schools, when the young girl is just budding into womanhood, when her nervous system is in the most critical condition, when we frequently find instances in which a dormant tendency to mental diseases become aroused into action, and acute

¹ From the Journal of the American Medical Association. Read in the Section on Dental and Oral Surgery, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

mania forms one of the risks through which many young women have to pass at the age of puberty. As soon as any symptoms of eccentricity display themselves, at once the parents or the physician should interfere and relieve such pupils from study and school, for this crowding and cramming tends to the deterioration of the development of the teeth and the whole body frame. From this rachitic condition of the teeth, as in imperfect bony union after fracture, the administration of phosphates, lime salts, etc., is of great assistance to aid the young and bony columns to attain their full size and strength. Exercise, sunlight, air, rest, and short lessons, with a small class in charge of a competent teacher, who restricts studies to school hours, by day, would tend to a more salutary condition.

The new diseases, nervous exhaustion or prostration, like the defective teeth of the young, the pale blood of chlorosis, rickets, chorea, and tooth decay, is in a general measure mainly due to the overstrain of the young mind in search of knowledge in school, and, sad to relate, many pupils pass the door, who leave their health within the college walls, too feeble to develop the higher dreams of ambition and thus disappoint the hopes of parents and lovers. It is unnecessary to describe the unhealthful effects of vitiated air upon the system of human beings in order to show the necessity for the work in hand, aside from the well-known direct effects of bad air, slight physical ailments of children, wholly unnoticed, are often developed by the impurities of the air of our school-room into serious diseases. In the public schools of Baltimore, like other large cities, in many-storied buildings surrounded by alleys, and overcrowded with children trying for a primary education, with defective ingress and exit, although trained to march and counter-march, to gymnastic exhibitions, and trained to fire alarms under the command of their chief; yet in case of fire many may perish. Under the sudden influence of alarm from fire, if panic-stricken, what is the dire result? The tumultuous crowd without reference to order or previous instructions are rendered insane and inoperative, and the consequence is a fearful destruction of life and limb. All this could be saved by the return to our primitive form, the country school,—viz., every precinct in each ward of our cities should have a reproduction of one-storied buildings, and plenty of fresh water and air; the interior containing study-, class-, and teachers'-room, suitable to accommodate seventy-five to one hundred pupils,

with twenty-five to fifty scholars to the teacher and assistant ; with direct light from four sides, and ventilation from every direction. In this subdivision of school, it might be argued that extra expense would be objected to. There can be no expense in a business way which would be compensated by the superior results in the improvement of education of our children, both mentally and physically, for the benefit of the nation, for what is the nation's expenditure to the country's good? The history of an individual education is but an unit, the history of a nation's education is the combination of all the units. We must remember that the teeth, hair, and nails are the usual inheritance of our male ancestry ; but heroism, pride, and valor are emblems of the maternal side. The mother is the teacher of religion and proper speaking, all of which is taught at the altar, the mother's knee ; hence, she is the instructor of the future nation, making good the adage that the " hand which rocks the cradle rules the world." " These are my jewels," said Cornelia, when she gave her sons to defend the nation. The dangers of overcrowding study on the coming mother, from a nervous stand-point, are well worthy of our consideration.

Neurasthenia saps the nervous energy that should be devoted towards fitting her for motherhood, within the next few years, when her greatest development in mind and body should be perfected. Hysteria is the most prolific source of domestic infelicity. Although the immortal Dante could in imagination descend to the uttermost bounds of Tartarus, and in vivid colors depict the state of the damned, yet would his pen have been wholly powerless to describe the bodily torment and agony of spirit of the unhappy victim of this dread affliction, where strong nature yields her powers to unnatural nervous prostration. How often do we see some fair young creature, whose rounding muscles and graceful contours bespeak the budding woman, subject by reason of a peculiar nervous organization to St. Vitus's dance,—that peculiar involuntary twitching of the most diverse groups of muscles, especially peculiar to school girls ; such torture the iron hand of the Spanish inquisition would have been powerless to inflict. Much attention is being directed to some of the defects of our public schools, which were but a few years ago regarded as the perfection of education. As to the proper location and structure of the building, and the method of heating and lighting, ventilation and safety from fire and panic and the danger resulting from

the shock to the nervous system, these I shall not discuss. I desire, however, to point out that nervous dyspepsia is common to the public school of higher grades. Defective appetite, deficient assimilation, constipation, and malnutrition impoverish the blood, the gastric juice, the bile, and the tissue-forming materials. Hence the children lose their desire for food and regularity, and complain of lassitude, with marked cravings for such stuff as suits them least; cheap candies, pickles and chewing-gum, slate-pencils and fullers' earth. This boulimic state of the appetite fails to afford nourishment to the growing, and commonly entails a bad habit that often continues until maturity, which should be the age of perfection and beauty under happy circumstances of health. These unhappy surroundings render them feeble in mind and body, with a tendency to chorea, epilepsy, and anæmic condition of the growing boy, and chlorosis of the girl. Hence full development can never be acquired until the cause of such arrest shall have been removed. We want no walking libraries of our children, with straps holding a dozen books; to study at late hours by bad gas-light, when they should be asleep in a well-ventilated room.

There should be laws forbidding the deadly practice of cramming, crowding, and forcing the young and tender mind out of all proportion; all reason, all common sense, urged on with the foolish idea that he or she may gain the prize, a miserable fad that destroys the happiness and future prospects, be it a worthless story book or a gold medal; it is a cheat and a snare. The moral obligation of every true physician and dentist should prompt him to act speedily and forcibly in this matter and join with the mighty voices of great sanitarians; for the time is propitious, the demand is urgent, and if we fail to meet the emergencies we are cowards, unworthy to bear the title of doctor,—viz., members of the great healing art, which prevents as well as rectifies diseases.

In the schools, personal contact is unavoidable, and the susceptibility of the children is so great that many must fall victims to infectious diseases. There are several methods of carrying contagion unwittingly. The school-books are usually covered with muslin, worsted, or cloth, and are frequently returned to school, after having been in the possession of children who have been ill with infectious diseases. The indiscriminate use of slate and slate pencils by the children is another source of disease. The

washing of the slates with saliva is not an improbable method of disseminating diphtheria and other diseases. In the higher grades, it is now the custom in many of the schools to use paper pads and lead pencils, but even here the moistening of the points of the lead-pencils with the tip of the tongue may be the means of transmitting certain diseases. The improper storing of the children's outer garments is another source of danger. Isolation and disinfection are the chief means to be employed by sanitarians for overcoming infectious diseases. Slates and slate-pencils should be discarded entirely, and the pencils or pens supplied to the pupils should be individual property. Books should never be covered with any textile fabric, but with stout glazed paper. The outer clothing of the children should be placed in closets outside of the class-room, and should be in some way disinfected while there. The children should be compelled to come to the class-room with clean faces, hands, and nails. Many teachers are very watchful and are often very quick to detect infectious diseases. A mild attack of scarlet fever or measles is popularly considered to be non-contagious, and hence such children are often returned to the schools before they have recovered. Such practice cannot be entirely avoided. Every child found to be suffering from sore throat should be immediately sent home, and not allowed to return to the school until well. It has been the custom of the board of health to keep the principles of the schools informed as to what localities within a certain distance of the school are infected. All of the school children are required to present vaccination certificates, or to be vaccinated if this has not been done for seven years. According to the rules of the department, the board of health does not perform such vaccination, except with the consent of the parents or the guardians of the children.

The oppressive tasks of the public schools, the unnatural requirements of modern society, fed, as it is, by depravity in all its forms, stimulate the passions and affective faculties, bringing a constant tension and strain on the understanding and invite insanity by way of many nerve-channels, which did not formerly exist. These are the principal causes of the increased number of neurotic troubles, and should be the subject for serious reflection of the dentists, physicians, moralists, and the government. This cannot be safely disregarded. We must make a halt in these rapid proceedings, to contemplate a way of action for better things.

Let us try in some degree to imitate the rural advantages of health.

Now note the difference in favor of the country school-boy as he plods his way to the school-house, surrounded with shade and supplied with sparkling spring water; how he arrives at school happy and bright in the ruddy glow of health, his study being confined to the hours of the school; no books to carry back and forth, strong and active; while his city cousin but keeps alive with little color and less vigor, poor appetite, cannot hold a semblance of the country boy, who has constant outdoor exercise, simple wholesome food, with the very best of appetite, grandest digestion, no dyspepsia, no constipation, no sallow skin, no carious teeth to mar his manly appearance or drive him to distraction; he grows apace with the weeds, well developed in body and mind, helping to make the record of such school-boys as were Washington, Jefferson, Madison, Webster, Clay, Franklin, and Adams; of such nobility our nation should be proud. It is of record that these men had noble mothers, all Cornelias pointing to her living jewels, and like the mother heroine declaring that rather than see her boys cowards or hirelings she would sooner see them brought back to her on the point of their swords; such mothers make noble sons, and such sons make noble nations; such mothers can come from no pale chlorotic school-girls as we see now, nor can they replace their sires with the hardy generation which gained our independence. They must be healthy, vigorous; must have at the beginning of their pregnancy all the important conditions occurring in the make-up of women of their former grandames. This is not only important by reason of the peculiar conditions arising in the mother, but possesses a deeper meaning when we consider the new relationship which will soon spring up by means of a factor in the child. The mother is now called on to a renewed physiologic condition of existence. She has grown and lived for herself alone heretofore. She has to create and live for another, which must depend upon and derive its sole subsistence from the maternal blood, and if this blood is not of the strongest elements, that mother had better never be a mother. The healthy mother makes and keeps a strong healthy child. The mother who fails to nourish the child through want of strength, lack of milk, or affection, is sure to lose the affection of that child. The lack of affection means neglect and loses to the nation its best hold on its children. Thus, when we are con-

fronted with the fact of how far our school-girl life is a perfect one in point of development and health, we say nothing of the morals; thus, to have a healthy society formed only of healthy factors, these factors being mainly healthy, vigorous mothers; for the father may be but the pigmy of a man, and yet impart the germ of the healthy being, which the mother goes on perfecting,—viz., such mothers as those of our forefathers who fought for and gave to us our independence. Such perfection of mind and physical development could never have resulted from the forced environments of the public schools, as now found in all our large cities.

From the crowding, the cramming, and the prize-seeking policy of our present system of public schools, give the growing girl freedom from too much restraint, give her ozone in abundance, plenty of room, plenty of light, plenty of bicycling, good company; allow mixed society, free expression, boots, spurs, and hats, horseback and rowing; and you will create the coming woman with broad hips, big bones, full brow, courage like the lion, and virtue like Bessemer steel.

A "Clean" Shave.

Nothing is easier than for contagion to be conveyed from a diseased to a healthy skin during the act of shaving, and many cases have now been recorded proving that diseased processes have in this manner been propagated. Probably the readiest manner available to the barber for preventing such untoward occurrences would be by sterilizing his "instruments" by means of heat, either by steam or boiling water.

Razors should be made so that their handles would not suffer from the exposure to high degrees of heat, and the rule should be enforced that in no case should any of the "instruments" be used consecutively without having first been submitted to the sterilizing process. By this rule, then, each customer would be sure of having a "clean" shave in more senses than one. Of course, also, on the principle of a "fresh pot of tea for each customer," a freshly scalded-out lather-pot should be included with each shave. Unless these or similar precautions be carried out in barbers'-shops, cases of conveyance of infectious skin-diseases from customer to customer cannot fail to occur.—*Medical Press.*

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The Universal Value of Hygiene.

IT must be accepted by all who for a moment reflect thereon that of all possible possessions health is, by all odds, the most desirable. Let one be possessed of wealth untold; of intellect most brilliant; of beauty most entrancing; of unbounded ability to acquire and enjoy all the so-called artificial pleasures of the world; let one be so equipped (if such an equipment be possible), yet let him lack the healthful performance of any one organ or part of the body, and all his possessions are neutralized by this one deficiency. It is impossible to conceive of a thoroughly happy dyspeptic, even though he may possess the millions of a Cræsus.

It is impossible to picture perfect happiness for any one whose nerves are not in thoroughly sound condition; it is impossible to find a thoroughly contented man or woman whose health is not thoroughly sound.

We use the words *perfectly* and *thoroughly* advisedly, because while we contend that our proposition is absolutely sound in the abstract, yet we are very glad that it is capable of modification and explanation. While the *perfection* of happiness is possible only when associated with *perfection* of health, yet a measure of happiness is possible to all, even to those whose health is deranged, and, fortunately, this measure is, or at least can be, just what each individual will make it for himself.

We have often argued that ill health is not altogether an evil. While the thoroughly healthy, strong, robust man may be the object of admiration by those who enjoy less vigor ; yet such an individual, unconscious of, because unwarned of, any necessity for caution, will often succumb, while his less vigorous neighbor will survive.

The knowledge that one has some bodily weakness is a constant reminder of the necessity for care, and such care, directed to the special weakness, will react favorably upon the body at large.

The special point that we wish to bring out in this article is that it would be a wise precaution if each person would acquire a more intimate acquaintance with his own physical condition than most persons have.

We do not counsel "*introspection*"; far from it; we do not commend anxious solicitude about health that makes one a nuisance to his neighbors; but we do believe that it would be very wise for every thoughtful person to have himself examined occasionally, in order that he might detect the first evidence of departure from a normal state; seek advice in reference to the proper means to hold this incipient derangement in check, and thus derive, so long as life might last, the greatest measure of health and happiness that might be possible to him at any and all times.

Hydrophobia and Lock-Jaw.

D R. WILLIAM T. WALKER, of Lynchburg, Va. (writing in the *Virginia Medical Monthly*), seems to have sound views on this subject. He does not deny the existence of a specific disease following the bite of a mad dog, but he does think that very many cases of so-called hydrophobia are but, as we would paraphrase it, the *realization of imagination*,—that is to say, a person is bitten by a dog believed to be mad (whatever this word *mad* may mean), he thinks that he ought to have—that he, of necessity, must have—hydrophobia, and he does have something and dies from it, but, to our way of thinking, this *something*, in very many instances, is but an "imperative conception" of what is regarded as an inevitable result. That dogs may have at times a poison within their buccal secretions that may communicate to man a fatal disease we do not deny; that there is no such thing

as hydrophobia we do not contend ; but that most so-called cases are "imperative conceptions" rather than "intrinsic realities" we do stoutly maintain. What do we mean by an "imperative conception?" that an idea, either false or not necessarily absolutely correct, takes such hold of the mentality of a not exactly balanced mind that it becomes an unquestioned fact to this mind, and through its all-powerful, all-controlling influence produces, through the agency of the nervous system, actual effects upon the body at large.

What we have said of hydrophobia, we believe applies equally to lock-jaw. A so-called nervous child runs a nail into the foot ; the frightened parents rush off for the doctor and commence at once to talk of lock-jaw, and they have lock-jaw for breakfast, dinner, and supper ; the poor child is entertained with a full description of the symptoms of the disease, and its inevitably fatal termination is never for one moment allowed to be lost sight of. Is it any wonder that after a while this poor, little, nervous victim of parental solicitude commences to feel a little stiffness about the angles of the jaws ; is it any wonder when it has been constantly told that the parents are continually on the look-out for this first symptom of approaching lock-jaw ; the child having been continually, hourly, almost momentarily, investigated as to the presence of this stiffness ; is it any wonder that after a while the stiffness that has been so earnestly looked for is found ; do we not generally manage to find that which we persistently look for ? When this "imperative conception" of the first symptom takes hold of the mind of the child, it is but an easy matter for the anxious looks and frightened acts of the parents to so impress the impressionable nervous system of the child as to bring about all the symptoms that have been so repeatedly impressed upon the child as sure to follow.

Our idea, we are sure, is clear ; while we do not deny the existence of hydrophobia and lock-jaw as real diseases, we do claim that very many so-called cases are but functional nervous conditions, the result of "*suggestion*."

The practical application of this idea is obvious. If your child is bitten by a dog or punctured by a nail, send for a doctor, of course, and have the wound properly treated ; but do not talk of the possible results ; wait till they come, and if you do, they will *seldom* come. Do not allow one word of apprehension in the

presence of the child ; do not “ *suggest* ” to the child that which you do not want the child to have ; do not forget that children are very susceptible to suggestions.

A Fallacious Argument.

EVERY now and again one hears the argument brought forward against certain hygienic recommendations that many people do not observe them, yet still live. To illustrate : let one argue against the use of canned vegetables and some scoffer will reply that they form the staple food in winter of the mass of humanity, yet they seem to live on ; argue against late hours, dissipations of various kinds, loss of sleep, the thousand and one things that sanitarians know are prejudicial to health, and we are met with the answer, that many millions of persons are all the time doing these things, yet live. The fallacy of this argument ought to be apparent at a glance, but it is not. When one says that canned vegetables are not wholesome, he does not mean to say that the consumption of one can of corn will cause death in twenty minutes ; when one preaches against loss of sleep, he does not mean that he who does not have enough of it will die within a week ; when one talks of the many little things that he claims are prejudicial to health, he does not mean that they will prove immediately or rapidly fatal. A dose of *canned* lobster salad will not kill as quickly as a dose of lead from a rifle, yet they are both detrimental to health, one more rapidly so than the other, it is true, but both injurious. The scoffer will admit that five grains of strychnine for dessert will prove prejudicial to health, while he will deny the same attribute to a saucer of ice-cream ; the former he sees kill, while the latter he cannot see chill the stomach and check digestion.

This is the whole point, because we see many thousands of persons daily doing that which sanitarians tell us is prejudicial to health, yet living still, we must now jump to the conclusion that the sanitarians are wrong.

Health is a relative not a positive condition ; perfection of health is practically unknown ; no human being exists who is absolutely and typically healthy ; hence the most that we can expect or have is the greatest measure of health of which each individual may be capable. Now, since health is such an illy-defined condi-

tion, it is obviously illogical to argue that because this or that food, or this or that practice or habit does not kill quickly and obviously, that it is, therefore, not injurious to health ; one cannot justly reason or argue in such a "hit or miss" manner.

Those who have made a study of the subject, those who have opportunities for observation and have improved them, such authorities tell us that certain things are injurious to health, while certain other things are not, and it is not just nor logical for any one to set up his entertained, superficial observation, based upon faulty premises in opposition thereto. In matters of health, as in many other questions, we must accept the dictum of such as have the authority to speak.

Royal Death Customs.

At most of the European courts it is to this day customary for dead personages of royal and imperial rank to hold a sort of levee or reception just before their interment, when all the great dignitaries of the realm and the members of the court pass one by one before the august dead, bowing low and kissing the cold and clammy hand of the corpse.

Even still more strange are the ceremonies that used to be in force in France when that country still enjoyed the advantages—or disadvantages—of a monarchical *régime*. During the entire forty days that the embalmed corpse of the illustrious dead lay in state in the Cathedral of St. Denis, the court ceremonies were carried on within the abbey as though the monarch or prince still lived. The royal or imperial table would be set every night in the refectory and the grand master of ceremonies, when dinner was brought up, would proceed in full uniform to the chancel of the church, where the corpse lay rigid and cold, and, with a low obeisance, would exclaim,—

"Sire, the dinner is served according to your Majesty's orders!"

Then the chamberlain, standing on duty beside the corpse, would respond with great dignity,—

"His Majesty has been graciously pleased to dine already and desires to remain undisturbed," whereupon the master of the ceremonies would back out with the three customary low obeisances to the dead, and would order the meal to be taken away.—*Philadelphia Press*.



Manslaughter and Typhoid Fever.

The Duluth Gas and Water Company has been indicted for manslaughter in having caused the death of Harry W. Smith by typhoid fever, alleged to have been contracted from water delivered through the mains. Their franchise specifies that they shall furnish pure water.

Vaccinated His Fingers.

A young New Orleans man, named Taylor, recently learned a lesson, the moral of which is, "Do not touch anything you may see in a doctor's office."

Taylor was waiting for his physician, and while doing so took occasion to manicure his nails with an ivory instrument that lay on the table. A few days later his finger-tips became so sore that he was obliged to consult the doctor, who found that the sores were those caused by vaccination, which Taylor had inadvertently practised upon himself by using a vaccine point as a nail-cleaner.

A Case of Oyster-Poisoning.

Case of poisoning from the use of oysters are becoming exceedingly common. The *British Medical Journal*, for January 4, reports a case of wholesale poisoning, in which the persons who attended a public ball, nearly 500 in number, were exposed to infection with typhoid fever through the use of oysters. In quite a number of the cases the illness was very clearly typhoid fever. Investigation showed that the oysters, which were furnished by a Glasgow merchant, were obtained from a bay in Holland, the water of which was polluted with sewage. The investigation of the case has not clearly established the connection of the oysters with the enteric fever, but the bacteriological examination made showed numerous kinds and great multitudes of microbes, and other investigations have traced similar outbreaks to the oyster, by the disclosure, either in the animal itself or its juice, of the specific microbes of typhoid fever.

Books for Invalids.

It is said that a novelty in books is to be issued under the title of the "Invalid's Library." Each volume is to be printed on a long strip of paper-covered muslin, so that a patient can comfortably unroll it and read in bed, thus dispensing with the attendant fatigue of holding a heavy book.—*Popular Science News.*

Retribution.

In every life each deed, each word, each thought,
 Bears ever fruitful harvest of its kind,
 Its nature stamped upon the heart and mind,
 Ever remains with good or evil fraught.
 Man's soul is but the sum of life below,
 We are just what we daily, hourly live,
 Nor may we other recompense receive
 But reproduction of the seed we sow.
 Who soweth to the flesh, of flesh shall reap
 Corruption—he who to the spirit sows
 In everlasting life his soul shall keep—
 For by its fruit the tree its nature shows.
 Man makes eternal character in time,
 Dies as he lives, degraded or sublime!

—*Thomas Osmond Summers.*

Done to Death with System.

A certain New York baby who has the luck or misfortune of having a Vassar girl as nurse is consequently allowed to howl itself to sleep day after day on the ground that it should be got into the habit of slumbering without extra attention from parents or guardians. In a Vassar girl this action has, of course, a lofty, theoretical motive. In a plain, ordinary, uneducated Bridget it might be imputed to simple laziness. Seriously, what an immense amount of useless wear and tear and comfortlessness little children are subjected to in the name of "system." A mother of grown children once said that she thought that the oldest child of a family was apt to be the victim of many dismal educational theories. By the time the second or third had appeared on the scene the parents had usually recognized the general hopelessness of trying to run nature into a mould, and had rediscovered for themselves the one thing certain about an infant, whether of smaller or larger growth—its uncertainty.

Learning Rapidly.

Doctor—The trouble with you is that you don't take enough exercise. Take more.

Blinks—Thanks. How much do I owe you?

Doctor—Two dollars. Here is your change. Much obliged. Heigho! I don't feel very well myself.

Blinks—You take too much exercise, doctor. Take less. Two dollars, please.—*New York Weekly.*

The Public and Poisons.

A very short time ago we commented on the ease with which the public from time to time obtain large quantities of poisonous substances in spite of the laws which are meant to prohibit the sale of poisons. In the case referred to the poison was arsenic, which was sold mixed with other substances for the purpose of killing weeds, and now a further example is afforded by a case which occurred at Tenbury, in which a man was prosecuted for selling strychnine in large quantities. It had been thought for some time that poison had been obtained in the district owing to the death of several animals, and in this particular case a shilling's worth of strychnine was sold, which the analytical chemist declared was sufficient to poison a small army of men. It is without doubt most important to prevent the illegal sale of such poisons, and every possible means should be used to check it.—*London Lancet.*

The Prophylaxis of Malaria.

According to Professor Laborde, the preventive action of quinine can no longer be doubted, as can be that of other similar substances, vegetable or mineral, such as curare, strychnine, arsenic, etc. He adds that if the preventive action of quinine has been contested by some authors, it is because that substance had been administered in too small doses (five grains generally) or too far apart, and insists upon advantages offered by the muriate of quinine in preference to the sulphate usually employed. It should be borne in mind that the word dose in France refers to the quantity given in twenty-four hours or to the whole quantity given to attain any special therapeutic result. The military statistics have proven effectually that quinine, even if given daily in small doses,

is powerless to prevent an access of malarial fever. Even the employment of quinine at proper times and in doses sufficiently high gives but a deceptive security to doctor and patient alike, if other prophylactic and hygienic precautions are not observed at the same time, and notably that of avoiding as much as possible malarious regions in general and shortening to the utmost the stay of the people or troops in them.

In the army medical service the muriate of quinine is exhibited in place of the sulphate, as the former is more soluble.—*Medical Record*.

The Starch Bath.

Parisian women, it is said, put starch in the bath to soften the water, starch being cheaper than borax or toilet vinegars, and more trustworthy than ammonia, which, it is said, induces a growth of down on the skin. The Parisian ladies' maids prepare many delicate toilet waters. They have materials at hand for meal baths, starch baths, flower baths, sea baths, and medicated baths. What is regarded as a luxurious bath contains as many ingredients as a Christmas pudding. The bath-tub is lined with a linen sheet gored so as to fit the tub. The bath bag contains perhaps almond meal or oatmeal, with orris root, and the contributions of at least a dozen bottles. The tub being filled almost to the edge, the bather gets in and stays there until she is scented through and through.—*Popular Science News*.

Heredity.

Heredity is a subject so little understood by scientists that any light thrown upon it is very desirable, says the *Medical Examiner*. The facts, as well as the factors, of heredity are many, and very curious. They may be likened to the various chemicals which a chemist uses to bring about certain mixtures, or the colors which an artist employs to obtain certain effects. Given certain elements in certain proportions, and certain results are bound to follow. There is a difference, however, between the artist or chemist and nature. The artist and chemist know what substances they use, and in what proportion, and can predict what result they will obtain almost to a certainty. We do not know what elements nature uses, and in what proportions. We

do not know the intensity of quantity of the hereditary element which enters into a living being composed of other unknown elements, and in unknown quantities. Consequently it is always a problem what the result will be. Then we have diet, exercise, and environment, which includes hygiene, education of every attribute of the mind, and the influence of other human beings upon the individual, and the problem becomes an interesting and complicated one.

An Odd Benediction.

The Scotch Archbishop Foreman—in the sixteenth century—was so poor a Latin scholar that, when he was obliged to visit Rome, he found great difficulty in conforming to some of the customs of the Pope's table, to which he was invited. Etiquette required that the Scotch Archbishop should take part in saying a benediction over the repast, and that illiterate guest had carefully committed to memory what he believed to be the orthodox form of words. He began with his "Benedicite," expecting the cardinals to respond with "Dominus," but they replying "Deus," Italian fashion, so confused the good bishop that he forgot his carefully conned phrases, and in good broad Scotch, said,—

"To the devil I give you all, false cardinals!"

To this devout aspiration, Pope and cardinals, who understood only their own language, piously added, "Amen!"

An Indian Legend of Creation.

Among the many interesting traditions that have lately been brought to light by a writer who has been making a careful study of the legends and folk lore of the Cheyenne and Arapahoe Indians of the Indian Territory, is one that accounts for the origin of woman. The Indians of these tribes sniff disdainfully at the rib theory when the resident missionaries try to teach them the initial lesson of the Old Testament regarding their first parents. The wise men of their tribes long ago wrestled with the fundamental facts of creation and evolved theories concerning it, which, with the lapse of time, have come to be regarded by the Indians of to-day as historical truths. It is little wonder that the Cheyenne and Arapahoe braves look down upon their women

as inferior beings. The legend says that originally all men were created with long, sleek and comely tails. These tails were their delight, and they adorned them with paint, beads, and wampum. Then the world was at peace,—discord and wars were unknown. Men became prosperous and proud, forgot their Maker, and were envious and quarrelsome. Their Maker became displeased with them, and sent a scourge upon them to teach them humility, and make them realize their dependence on the Great Spirit. He amputated their tails, and out of these beautiful members fashioned women. Women, say the Cheyennes, still retain traces of their origin, for we find them ever trailing after men, frisky, impulsive.

The Treatment of Melancholia.

The question of treatment, says Dr. W. B. Pritchard (*New York Polyclinic*, March, 1896), is one of peculiar interest and importance, chiefly for the reason that if the domestic situation can be controlled by the family physician, the patient should most emphatically be treated at home. Nearly all such patients are fully and appreciatively cognizant of their surroundings, which fact is a sufficient explanation of the harm done by incarceration in an institution with association with others insane. In treating these cases at home, two conditions should be demanded by the attending physician positively and imperatively. First, absolute control over the patient's personal and domestic life, and, secondly, the presence constantly of an attendant or nurse, preferably one with special training. As a rule, the patient should be isolated from the rest of the family, leaving the personal influence and domination of the physician and nurse free from interference. The patient's room should be changed both in location and furnishings. In the debilitated cases partial enforced rest should be obtained by requiring the patient to lie abed until ten, eleven, or twelve o'clock. The diet should be nutritious and quite sufficient. If through delusions or in an effort to commit suicide in this way the patient refuses to eat, forced feeding should be resorted to by rectum or mouth, or if resistance is excessive, by the catheter introduced through the nose, down the throat. The drug treatment resolves itself into three indications: the relief of insomnia, the correction of visceral derangement and disturbed secretions, and the relief of psychic pain. For the insomnia we have a large and satisfactory supply of agents. I do not believe

it is ever wise to trust to nature or the so-called simple remedies for the relief of this insomnia, but that some reliable hypnotic should be used at once. I prefer above all others trional. It is free from injurious or disagreeable effects or action and is more certainly reliable than any other. The dose should be from ten to twenty grains in water, shortly before retiring. It may be combined with an equal quantity of sodium or potassium bromide with better effect occasionally. It does not seem to lose its hypnotic action even after prolonged continuance, nor does it tend to establish any drug habit. Occasionally the sleep induced from a full dose is alarmingly prolonged, but this is a rare idiosyncrasy of no normal significance. In the remainder of this excellent article Dr. Pritchard calls attention to the importance of removing anti-infection of the gastro-intestinal tract by the administration of laxatives (*cascara sagrada*, decimal doses of *calomel*) and intestinal antiseptics (*bismuth*, *subgallate*, *salol*, etc.), and of relieving physical pain by opium in the form of the aqueous extract in doses of one-eighth to one-third grain three or four times daily.

Treatment of Leprosy.

Although the clinical appearances of leprosy were well known to the physicians of a remote period, it is only quite recently that its pathology has been established on a scientific foundation. Bacteriological researches have shown that it is due to a specific micro-organism, and that in many respects it resembles tuberculosis and lupus. Notwithstanding the new light thrown upon the pathology of the disease, however, the therapeutics are still almost as unsatisfactory as before, and it is therefore of more than ordinary interest to note the successful results obtained by Dr. Goldschmidt from a new remedy. The patient, a woman, presented well-marked leprosy lesions over the face, the disease being of nine years' duration. Having experimented with *iodoform* in cases of leprosy without success, the author noted the use of *euophen* as the most available substitute, which was first administered internally. As this proved inefficient, however, he next tried hypodermic injections of alcoholic and ethereal solutions, but soon discarded them on account of the pain produced, while the injection of oily solutions (*euophen* five grammes, olive oil ninety-five grammes) was also unsatisfactory, because of the difficulty of introducing it into the firm, resisting tissues.

Finally, it was found that by rubbing the oily solution of eucrophen into the leprous nodules, and by application of compresses moistened with the oil, a beneficial influence could be exerted upon the diseased areas. The inunctions were employed three times daily for a minute at a time, while the compresses were worn at night in form of a mask; a cotton tampon soaked in the oil was also introduced into the left nostril, which was the seat of leprous infiltration, this being renewed three times a day, and allowed to remain all night. After about five years' treatment with eucrophen in this manner a complete cure has been effected, which is evidenced by the entire disappearance of the characteristic bacilli, while the leprous lesions have also vanished, leaving the skin somewhat atrophied and discolored in some places. In view of the well-defined character of the nodules on the face, it is remarkable how slight were the changes in the structure of the skin left after their disappearance. In Dr. Goldschmidt's opinion, there can be no doubt but that the cure was obtained by the energetic and prolonged treatment with eucrophen, and that to its iodine component in the nascent state is chiefly to be attributed the bactericidal effect of the remedy. At any rate, this report of a cure in a disease which has proved so obstinate to therapeutic measures of all kinds should stimulate physicians practising in countries where leprosy prevails to give this method of treatment a careful and thorough trial.

Cure for Intemperance.

A medical man, in discussing the various modern cures for inebriety, says that a great deal of intoxication could be prevented by shifting the responsibility of it on the shoulders of the saloon-keeper and making him stand the consequences, says a writer in the *Chicago Record*. The adoption of this system in Denmark accounts in a great measure for the small amount of drunkenness found in that country. When the police of a Danish city find a drunkard in the street they summon a cab and, placing him inside, drive him to the police station for treatment by the police surgeon. When sober he is driven home. The cabman's charge, police surgeon's bill, and agent's special duty charge are then made into one account, and presented to the proprietor of the last place where the man was supplied with the liquor, who is compelled to pay the bill.

Dosing of Infants.

A nine-months-old baby had a cough and was also troubled with its teeth. The mother, on the advice of a neighbor, mixed a pennyworth of castor oil, a pennyworth of laudanum, and a pennyworth of syrup of rhubarb, and gave the child a teaspoonful of the mixture. It had the desired effect of composing the infant, but so effectually that the child never awoke again. And this is an enlightened age, when ignorance and carelessness of such a kind do not come under legal restrictions. Such cases are not uncommon, but that by such means the surplus population is weeded out is not sufficient justification for their occurrence. The responsibility which the officious neighbor took upon herself in prescribing deadly poison for another woman's child was a very serious one. It would not have been so lightly taken had she understood that in the event of her unintelligent advice resulting in fatal calamity she might find herself in the dock on a very sound charge of manslaughter.—*London Lancet*.

Fate of a Famous Health Resort.

Forty years ago Mentone was a healthy village in France, where lived peasantry happy on their farms and their superb physical state, conditioned by the climate. It was discovered that the region was a most healing climate for consumptives, and it became a Mecca for the unfortunates of Europe so stricken. The inhabitants abandoned their farms to wait upon the strangers.

The strong, healthy women forsook their dairies and became the washerwomen of the consumptives' clothes. No precautions were taken; the disease was not then understood as now, the theory of the tubercle bacillus not having been discovered.

The place to-day is bacillus-ridden, a pesthole, death itself. The hitherto strong inhabitants are emaciated, a coughing, bleeding people filled with the germs of consumption. The soil and the air are both contaminated with them. It is no longer a resort. The same fate, it is believed, awaits many other similar health resorts unless active means are taken to destroy all germs. This will be a most difficult task, because consumptives themselves, as a rule, are not thoughtful of the danger they spread, or of the rights of others. They should bear in mind that if all others had been careful, they, too, might have escaped.—*The Journal of Hygiene*.

Dangerous Lights.

An English paper states that London oculists are up in arms against the very serious damage to the community caused by the electric light. Several eminent eye doctors are agreed on this point that unless a stop is put to the exposure of uncovered electric lights in the streets and in shops and offices nearly all of the population will become blind. Experts are so greatly exercised in the matter that they even suggest that Parliament should take it up and prohibit the use of plain glass globes for electric light unless they are properly shaded. Commenting on this, a London electrical journal says, "It is not customary to look at the sun, and not even the most enthusiastic electrician would suggest that naked arcs and incandescent filaments were objects to be gazed at without limit. But naked arc lights are not usually placed so as to come within the line of sight, and when they do so accidentally, whatever may result, the injury to the eye is quite perceptible. The filament of a glow lamp, on the other hand, is more likely to meet the eye, but a frosted bulb is an extremely simple and common way of entirely getting over that difficulty. The whole trouble can easily be remedied by the use of properly frosted or colored glass globes. In any case, however, the actual permanent injury to the eye by the glowing filament is no greater than that due to an ordinary gas flame."

Management of Children.

A competent nurse says that most of children's naughtiness is taught by mother or nurse. "Baby does not cheerfully kiss you. 'See, mamma cry if baby will not kiss her. Boo-hoo!' And mamma makes believe to cry in her hands till baby pulls her fingers away from the deceiving eyes, and mamma laughs and does not always remember when she stops boo-hooing to exact the kiss. Of course by a mere animal process of reasoning baby learns to cry for what it wants. Has it not had the 'line upon line?'"

"When baby makes a misstep and down he goes, avoid the Scylla and Charybdis of nursery shipwreck. Neither make a great fuss over the bump and weaken his self-control by too much sympathy, nor do that other miserable thing, strike the offending object of collision, saying, 'Naughty old table. Whip

the table for hitting little boy's head.' This is often the first lesson in combativeness, and the baby who hits back the passive chair that is said to have hit becomes equally active in slapping children or other folk who morally or physically oppose."

To Estimate the Dampness of a House.

Physicians are sometimes requested to estimate the relative dampness of an apartment or room. This is not always easy by simple inspection, as a room may be damp although saltpetre does not grow on its walls or mould in its corners. The following is an exact means of appreciation and one that is within every one's scope. In the room in question a kilogramme of fresh lime should be placed after hermetically closing doors and windows. In twenty-four hours it should be weighed, and if the kilogramme has absorbed more than ten grammes of water (that is, more than one per cent.), the room should be considered damp, and classed as unhealthy.

The question of the dampness of dwellings is a frequent cause of dispute between landlord and tenant, naturally solved in the affirmative by the latter, and in the negative by the former.

The question can be settled in the future by the test of the hydration of lime, of which I have just spoken, and which will give irrefutable proof of the validity of such complaint.—*European Edition N. Y. Herald.*

Mrs. Rorer on Diet.

"To eat pickles is to show a lack of education," said Mrs. Rorer, in the course of a lecture. "Plenty of phosphorus throws light upon the brain. Cooked apples are more easily digested than raw, but are not so valuable from a health stand-point. The sugar of nature is in fruit; man's sugar will create more destruction than a mad dog. Oatmeal is a valuable food if cooked for three hours and well masticated. All starchy foods must be cooked for hours. Buckwheat cakes are an abomination unto the Lord. Cabbage and onions if rightly cooked have no odor. When there is odor, they are ruined as food. To cook them rightly put them into water that is boiling hot, then keep it almost to the boiling point. Will cook in less time in water at 200 degrees than at 240."

Mr. Atkinson said the ladies sitting about him claimed that

she (Mrs. Rorer) was largely responsible for the indigestible things they put on their tables, as they all kept house by her cook-book. "Yes," answered Mrs. Rorer, "I know it; but I wouldn't eat the things in that cook-book for all the money there is in the country." Asked what she did eat, she said, for breakfast she had wheat grits and cream, a broiled chop, shredded wheat biscuit, and coffee without milk or sugar. For lunch, a Welsh rabbit and fruit. For dinner, a light soup, meat, and two vegetables, one to be green and served with a little oil and lemon-juice, a wafer and cheese. She did all her own cooking, never gave over an hour to preparing a meal, and never in her family made any special preparations for any one.—*Philadelphia Ledger*.

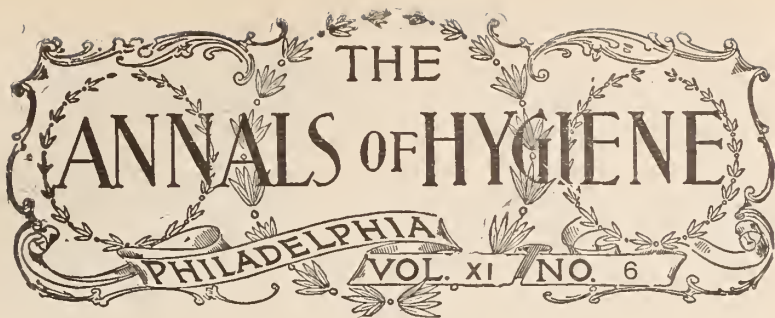
The House We live In.

This is the advice of the late lamented Professor J. M. Coates : "Think deliberately of the house you live in, your body ; make up your mind firmly not to abuse it ; eat nothing that will hurt it ; wear nothing that distorts or pains it ; do not overload it with victuals or drink or work ; give yourself regular and abundant sleep ; keep your body warmly clad. At the first signal of danger from the thousand enemies that surround you, defend yourself. Do not take cold ; guard yourself against it ; if you feel the first symptoms, give yourself heroic treatment ; get into a fine glow of heat by exercise ; take a vigorous walk or run, then guard against a sudden attack of perspiration. This is the only body you will ever have in this world. A large share of the pleasure and pain of life will come through the use you make of it. Study deeply and diligently the structure of it, the laws that should govern it, and the pains and penalties that will surely follow a violation of every law of life or health."—*Indian Med. Rec.*

Grape Shot.

Pat.—"Phwat does they use grape shot for?"

Mike.—"Shure, it's to give the inemy appendicitis."—*Puck*.



COMMUNICATIONS.

Purification of City Water-Supplies by Sand-Filtration.

BY FRANK J. FIRTH,
Philadelphia.

ORIGIN OF SAND-FILTRATION.

THE tendency of men to congregate in cities and towns located on the water-courses of the country, whether navigable or not, brings with it a demand for important supplies of clean and wholesome water for public use, while at the same time it causes a pollution of the streams that are naturally relied upon to furnish these supplies. Having polluted the waters, destroying both their cleanliness and their wholesomeness, there comes at once a demand for purification. The purification of water by artificial methods involves a large outlay of money, which must be contributed directly or indirectly by the residents of the city or town to be supplied. Long discussions and delays precede definite action, and it not infrequently happens that some terrible epidemic of water-borne disease, such as cholera or typhoid fever, operating upon the fears of the people is needed to end discussions and delays, substituting therefor definite and intelligent action.

The ideal public water supply is drawn from a mountain-stream or lake, that is and will always continue to be uncontaminated. Few places are so located as to make it worth while to waste much time in seeking such an ideal supply. It is either a myth or it is a practical impossibility because of financial condi-

tions. It is wise to recognize the impossible where it clearly exists, and if the best is not to be had endeavor to attain as nearly to it as may be practicable.

Storage Reservoirs.—It is usually wise and economical in arranging any city water-system to provide sufficient storage reservoir capacity to prevent any interruption in the daily supply owing to accidents. A river flood or a broken pump should not be allowed, under any circumstances, to deprive the people of an article so essential to their well-being as is a supply of clean water. Storage reservoirs, when properly constructed and cared for, may be relied upon, incidentally, to effect a marked improvement in the quality of the water. Under favorable conditions they should yield what one of their advocates recently described as "fairly good water."

As compared with a polluted raw water it is undoubtedly a fact that sedimentation under favorable conditions may yield a "fairly good water." It is by no means a fact, however, that such a water should be accepted by any community as a satisfactory answer to public demand for a clean and wholesome water. The only method at present known, and extensively used, for purifying contaminated waters and fitting them for safe use is sand-filtration. It is the purpose of this article to present in an elementary way some of the facts as to the development of the purification of water by sand-filtration. It is not the intention to attempt a scientific treatise on bacteria, nor to enter upon a discussion of the many problems in civil or mechanical engineering involved in the construction and operation of filter plants. The intention is rather to state in a plain way a few of the facts that every citizen may and should know before taking sides for or against this method of purifying the water needed for his daily use in home or factory.

All Filtration is Sand-Filtration.—In the first place, it may remove some misunderstanding and many doubts to point out that all filtration, worthy of the name, is sand-filtration. The sand may be from the sea-shore, from wells, or natural banks, or it may be an artificial product resulting from crushing certain varieties of quartz. Whatever may be its source, it is nearly enough correct for our present purpose to call it all *sand* and to say that all filtration of city water-supplies is sand-filtration. There are various methods of sand-filtration. It may aid in their comprehension if they are classified and described as,—

- (1) Natural sand-filtration.
- (2) Artificial sand-filtration.
- (3) Mechanical sand filtration,—(a) without coagulants ; (b) with coagulants.¹

Natural Sand-Filtration.—The term “natural sand-filtration” is popularly used in this country to describe what is really “artificial sand-filtration.” No scientist at home or abroad would voluntarily select the term “natural sand-filtration” to describe a process that is, at best, merely an artificial effort to imitate nature. It will, perhaps, be correct to say that the only filtration properly designated “natural sand-filtration” is filtration through sand in its original place, such as may be found in the case of the spring water as it comes bubbling through the earth clear, cool, and wholesome,—frequently sterile as the scientists say. Where springs do not exist, wells are driven, and the water drawn from their depths has been subjected to “natural sand-filtration.” Small communities, unable to secure satisfactory supplies from springs or ordinary wells, sometimes resort to Artesian wells or to wells or channels located adjacent to rivers or other water-courses, securing a “natural sand-filtration” through the body of sand or earthy material lying between the river-bed and the collecting wells or channels. All of these methods of filtering water contemplate the passage of the water through undisturbed natural beds of sand or earthy materials, and they are properly described as representing “natural sand-filtration.”

Artificial Sand-Filtration.—It is quite evident these methods are not available when the demands of large communities must be provided for. When these needs arise, the first resort is naturally to what may be designated as “artificial sand-filtration.” This method is a mere imitation on a large scale of nature’s process, as it is popularly called. With the well idea in mind, large excavations are made in the ground to be used as shallow reservoirs and filter-beds. The bed and sides of these reservoirs are made tight either by clay puddling or by the use of masonry or both. Underdrains are provided to carry off the filtered water, and the shallow basin or reservoir is filled to a depth of three to five feet with gravel and sand. Raw water (that is water as it comes from the river, pond, lake, or other natural source) is then allowed to flow

¹ Mr. John C. Trautwine, Chief of the Bureau of Water, Philadelphia, recently suggested that instead of the misleading terms “natural sand-filtrate” and “mechanical sand-filtrate,” now in popular use, the terms “slow sand-filtrate” and “rapid sand-filtrate” be adopted.

into the reservoir over the sand. It gradually strains through the sand leaving the dirt, vegetable matter, and other impurities on the surface of the sand, while the clean-filtered water settles into the under-drains and is carried off to the pump-house or reservoir for delivery to the consumers. This, in a brief and elementary way, represents the simplest form of what is improperly called "natural sand-filtration," but properly "artificial sand-filtration."

There are many interesting details entering into the construction and operation of such a filter, but they are scientific and engineering details, and as such are foreign to the purpose of this article. It is quite evident that as the water passes through the bed of sand depositing its impurities upon the surface (and 80 or 90 per cent. are deposited literally on the surface, say one inch, and do not penetrate the lower layers) the surface of the sand will gradually become coated so as to interfere with and finally to stop the flow of the water through the sand bed. This is exactly what happens and makes it necessary to draw off the water in order to clean the surface of the bed by hand-scraping. Of course, the filter-bed is out of use during the time it is being thus cleansed.

The first developments in "artificial sand-filtration" are thus suggested. There must be a storage reservoir of sufficient capacity to supply the city with filtered water while the beds are being cleansed, or there must be a sufficient number of surplus beds to insure an area for constant use equivalent in capacity to the full demand upon them, and allowing whatever proportion may be needed to be out of service undergoing cleansing. The area of these surplus beds must, of course, depend on the character of the water to be filtered. If the raw water is heavy with sedimentary matter, it is evident the beds will be choked and require scraping much more frequently than will be the case if the raw water is reasonably clean. It is a serious matter to have filter-beds rapidly placed out of service owing to heavy deposits of sediment on their surfaces. It involves a large outlay for surplus beds. It costs largely for cleansing and waste or replacement of sand. It risks the beds being all out of service under exceptional flood conditions, thus forcing a resort to the raw water as the direct supply to the city while the beds are temporarily out of use.

These difficulties have been partially met in practice by the next development in "artificial sand-filtration." Large sedimen-

tary basins are interposed between the river or other source from which raw water is drawn and the filter-beds. By allowing the raw water to stand in these basins twenty-four hours or more a large quantity of the heavier impurities settles, and the water passing onto the filter-beds is cleaner, and the life of the beds between the necessary scraping periods is advantageously lengthened. These sedimentary basins may be four in number, so that one may be receiving raw water; another standing to allow it to settle; another discharging the settled water on the filter-bed, and the last out of service being cleansed of its sedimentary deposit. It is evident the addition of the sedimentary basins, while of great value, materially increases the investment cost of the plant.

The "artificial sand-filter," with its sedimentary basins and carefully-constructed sand-beds, may be located in a section where for days, weeks, or months, during the winter, there is freezing weather. The filter-basins are shallow ponds of almost still water and they readily freeze, just as would any shallow mill-pond, without requiring exceptionally low temperature. Water freezes on minimum temperature, and not, as some writers assume, on average temperatures. A few zero days in a month may not seriously affect an average temperature for the month, but they are sufficient to produce solid ice and to materially interfere with the successful operation of an "artificial filter-bed." This condition of affairs brings with it the next development. Filter-beds in freezing localities are, or should be, covered to protect them against the weather. The covering is of various forms, but usually, in the best construction, of masonry arches covered with earth. It is desirable to cover "artificial sand-beds" for other reasons than because of freezing weather. It will be remembered that it is necessary to cleanse the beds by scraping the sediment from their surfaces, and that until this is done they must remain out of service when once clogged. This scraping can only be done satisfactorily when the surface of the bed is dry enough for laborers to work upon it. It is evident it would not be convenient or economical, even though possible, to cleanse the bed during a period of rain or snow.

The complete "artificial sand filtration plant" must, therefore, consist of sedimentary basins; filter-beds with an ample surplus area for cleansing; covers against frost, rain, and snow. Such complete beds cost about \$70,000 to \$75,000 per acre to con-

struct, exclusive of the value of the land, and their capacity under the best European practice is about 2,000,000 gallons of water per acre in each twenty-four hours.

There are continuous and intermittent "artificial sand-filters," each having certain relative merits, but it is not worth while to refer to them in any popular article. They may be dismissed as engineering and scientific details of operation rather than construction.

Mechanical Sand-Filtration—without Coagulants.—The next development in the purification of water by sand-filtration is found in what are known as the "mechanical sand-filtration" processes. Development may not, in its early stages, yield the desired improvement. It is a consequence of recognized imperfection or defect in existing conditions. The imperfections in artificial sand-filtration are :

(1) It requires a large area of level land not always to be had.

(2) It is a costly system to construct.

(3) It is inconvenient in cleansing and replacing the sand.

(4) It is slow in operation.

These recognized imperfections call for an effort to overcome them if possible, taking care, however, not to sacrifice in this effort any of the beneficial results attained by the artificial sand or slow filtration method.

There are various practical reasons for the existence of the mechanical sand types of filtration. It has been stated early in this article that cities and towns approach the filtration of their water-supplies through many discussions and delays. It is not so with the individual resident. The manufacturer must have clean water at once, and to do this he must provide his own filter plant. He cannot construct an "artificial sand-filter," with its large acreage and slow work. He must have its substantial equivalent in some less cumbrous form. Instead of the shallow reservoir he erects a wooden or iron tank. He places in the bottom of this tank the same kind of a bed of sand that would be used in an artificial sand-filter, through which the raw water entering his factory is to be strained. He connects the tank with a city-supply or his own pumps, provides proper outlet-pipes for the clean water, and proceeds to operate his filter. He soon finds the cleansing of the surface of his sand-bed by scraping is too troublesome and costly. Every need in life suggests to some inventive

mind its solution. Various methods of cleansing the sand-bed are proposed and tried. The one best adapted to the need is ultimately evolved, and to-day, instead of the manufacturer scraping the surface of the sand in his tank by hand labor, he operates a series of valves obtaining a reverse current of water through the bed, and, if he so elects, aids the work by the use of mechanism driving rakes or stirrers through the sand while the washing is progressing. In this way the dirtiest sand-bed may be thoroughly cleansed and ready for service again in about ten minutes.

Here we have then "mechanical or rapid sand-filtration" without the use of coagulants, and intended, chiefly in this stage of the work, to yield a clean water fit for fine manufacturing and without any reference to the removal of bacteria or disease-germs. Clean water and not wholesome water is the primary object of the manufacturer, and he is, therefore, able to filter at much higher rates per acre per twenty-four hours than would be thought of in an "artificial sand-filter." While 2,000,000 gallons per twenty-four hours per acre is the limit where "artificial sand-filtration" is resorted to for the purification of city supplies, the manufacturer obtains his clean water by the use of "mechanical sand-filtration"—without the use of coagulants—at the rate of 150,000,000 gallons, or more, if desired, in twenty-four hours per acre of sand surface.

It should be remembered that the term "mechanical" attaches to this type of sand-filter only because of the mechanism used to cleanse the sand-bed by the resort to reverse currents of water with or without power-rakes to stir the sand while being cleaned. Precisely similar methods have been tried with the "artificial sand-beds" where mechanism has been used to stir the surface of the sand while a stream of water was thrown across it to carry off the sedimentary deposit in this way instead of by hand labor scraping. The method is not an economic success in the "artificial sand-beds" because of the large area of the beds. What may be accomplished in a tank of fifteen feet in diameter may not so readily or efficiently be used on a half acre, or acre and a half, "artificial sand-bed." "Mechanical sand-filters—without coagulants"—are made in many forms and for many uses, including the cleansing of city water-supplies. While the earlier forms of mechanical filters were erected solely for the purpose of cleansing water, and before the relation of certain forms of bacteria to the wholesomeness of water was at all well understood, it is never-

theless claimed that these filters effect a marked improvement in the wholesomeness as well as the cleanly appearance of the water.

Mechanical Sand-Filtration—with Coagulants.—The next development appears to be found in the process of “mechanical sand-filtration—with coagulants.” The tank construction and general mechanism for city use are substantially the same in “mechanical sand-filters” whether used with or without coagulants. The use of a coagulant certainly represents a stage in the process of filtration development. It did not originate in connection with the use of “mechanical sand-filters,” but was a natural and scientific result of an effort to counteract the evil effects of the deleterious matter found in contaminated waters. The coagulants commonly made use of are metallic iron, commercial alum, or sulphate of aluminum, and in a smaller and rather experimental way, certain other salts.

The use of alum as a coagulant is so common as to be practically universal in the most effective forms of mechanical sand-filters. Notwithstanding its extensive use for many years in small filters for household use ; in the much larger filters used in large office-buildings, hotels, hospitals, etc., in almost every variety of factory requiring clean water, and in filtering the public water-supplies of a hundred or more cities and towns, the knowledge of the way in which the alum acts and the exact results obtained by its use are, it is safe to say, imperfectly understood by the general public. It is known to scientists that the sulphate of aluminum (commercial alum) when used in moderate quantities, say half a grain to a gallon of raw water containing lime, magnesia, etc., is decomposed into sulphuric acid and aluminum. The acid combines with lime or other suitable material that exists in or may be added to the water, while the hydrate of aluminum is formed and precipitated as a gelatinous mass on the surface of the sand-bed, carrying with it certain of the organic and other impurities in the water. With ordinary care in operation, such as must be exercised in the use of any mechanism, no more alum need be placed in the raw water than will be in this way decomposed and made useful. The resulting compounds following this decomposition are deposited with other matter on the surface of the sand and are washed away with all sedimentary matter accumulated on this surface at the time of the cleansing of the sand-bed. The gelatinous hydrate of aluminum is said to per-

form a useful function in partially filling the small interstices between the grains of sand, thus making it possible to stop the coagulated small germs or bacteria on the surface of the bed even when filtration is progressing at the extraordinary rate of 100,000,000 gallons or more per acre per twenty-four hours. Proposals submitted to the city of Philadelphia indicate that complete mechanical sand-filters, according to the best American methods, can be erected at a cost, exclusive of the value of the land, of about \$20,000, for a capacity capable of filtering 2,000,000 gallons in each twenty-four hours. This result is so amazing as to cause it to be viewed with a natural distrust by the scientists whose life-long experience has been with the "artificial or slow sand-filters;" they have found it necessary, from various causes, to limit to say a rate of 2,000,000 gallons per acre per twenty-four hours. While this distrust is natural and proper, it should not lead any disinterested investigator to condemn unheard a process of filtration which, if effective, offers many practical and economic advantages as compared with "artificial sand-filters" of Europe.

It may be worth while to here say a word about a practical difficulty most persons experience in their early consideration of this filtration problem. When a tank full of sand is placed in the line of a water-main, and the water is forced to pass through it, the idea naturally suggesting itself is that there must be a great loss of pressure. We almost expect to see the water cease to flow at once. On reflection, however, it is easy to understand that if the small open spaces between the separate particles of sand aggregate an area larger than the area of the supply-pipe there is practically no obstruction at all to the free flow of the passing water.

Louisville, Kentucky.—The mechanical sand-filters using coagulants should be subjected, in actual operation under city conditions, to a rigid scientific scrutiny, as is now being done at Louisville, Kentucky, which to-day stands in advance of every American city in its method of studying its own local water problem. It has not yet made known the result of its investigation, but when this is done it is safe to say it will be the most valuable contribution thus far made to accurate knowledge upon the subject of mechanical sand-filtration. Thus far the reliable bacteriological analyses of the filtrates from the mechanical sand-filters have been comparatively few in number and almost

entirely confined to laboratory experiments or experiments on a laboratory scale. The results attained under these favorable conditions are by no means conclusive, but they certainly justify such intelligent investigation under city conditions as that now being made in Louisville.

Filters in the United States.—It is something in favor of the mechanical sand-filters that our own people, who are quick to appropriate good, economic methods of every sort, have with practical unanimity adopted the mechanical sand system in preference to the artificial sand system on the European model. While hundreds of cities and towns in the United States and Canada filter their public water-supplies by mechanical sand methods, there is but one artificial sand-filter in this country (at Lawrence, Mass.) that is recognized as worthy of note. The Lawrence plant is a comparatively small one, filtering the water-supply of a city of but 50,000 inhabitants, and it is by no means a complete filter of its type. It has no sedimentary basins between it and the Merrimac River, from which it is supplied. It has but a single bed without divisions, thus making it difficult to cleanse it satisfactorily. It has not a tight masonry bottom, and, in consequence, it allows the river- and surface-waters to enter the effluent in a small way and thus pollute it. It is not covered as a protection against frost, rain, and snow. Notwithstanding these defects, due to an enforced economy in its construction, this Lawrence plant has demonstrated its practical value in greatly diminishing the disease and death-rates from typhoid and like causes.

Results of Filtration.—Any properly-constructed and operated artificial or mechanical sand-filter will remove from water the sedimentary matter visible to the ordinary sight, yielding a clean, clear filtrate in place of a water clouded and offensive owing to its containing mud, coal-dust, or worse impurities. The clean, filtered water thus obtained is certainly improved for ordinary household uses as well as made suitable for practically every variety of manufacturing industry. As to this there is no question or doubt. If this was all that could be accomplished by filtration, its use would clearly justify its cost and would pay a large return thereon in attracting population and manufacturing industries to the city where a plentiful supply of clean water was an assured fact.

But filtration does much more than this. It not only cleans

foul and contaminated waters, making them more agreeable to the sight and suitable for many uses ; it is an established fact, as to which all well-informed authorities are agreed, that the filtration of city water-supplies gives a wholesome in place of a disease-bearing water, with an unmistakable diminution in the number of cases and deaths from such water-borne diseases as cholera, typhoid fever, etc. The experience of Berlin, Hamburg, Altoona, Lawrence (Mass.), and many other places is a matter of authoritative public record and questioned by no one familiar with the facts. It will not be forgotten that all varieties of filters are artificial creations, machines needing intelligent care. It is possible with filters, as with all other types of mechanism, to meet with accidents in operation. With intelligent care such accidents should be few in number and unimportant in result, but it is a fact accidents may occur. In such event the worst result would be that water might have to be temporarily drawn direct from the river or other source without passing through the filter-bed, and the public supply during a few days or hours might then possibly be as bad as it would certainly be at all times if the filter-bed did not exist. To condemn the use of filter-beds because they may at rare intervals and for short periods be subject to interruption or diminution in efficiency from unforeseen accidents would be about as reasonable as it would be to discard pumping-engines from a like cause.

Conclusions.—In conclusion, the following facts should be known and always remembered :

- (1) All filtration is sand filtration.
- (2) Sand filtration may be either,—
 - (a) Natural.
 - (b) Artificial or slow.
 - (c) Mechanical or rapid, without coagulants.
 - (d) Mechanical or rapid, with coagulants.
- (3) Complete artificial systems on the best European model cost exclusive of land about \$70,000 per acre, and filter 2,000,000 gallons per acre in each twenty-four hours.
- (4) Complete mechanical systems on the best American model cost exclusive of land about \$20,000 for a capacity capable of filtering 2,000,000 gallons in each twenty-four hours.
- (5) It is a fact, established beyond dispute, that the filtration of contaminated waters will reduce the disease and death-rates from typhoid fever, cholera, and like diseases.

(6) Cities supplying plenty of clean and wholesome water attract population and every sort of manufacturing enterprise.

(7) Tests should be made in each locality to determine which system of filtration is best adapted to the existing local conditions.¹

National Quarantine.

DR. JOSEPH F. EDWARDS, Editor ANNALS OF HYGIENE.

DEAR SIR: In answer to the queries propounded in your letter of recent date, I beg to say that in my opinion education and legislation must go hand in hand. It is difficult to enforce any law which is much in advance of public sentiment. To attempt to do so is to invite contempt of the law, which is the first step towards anarchy.

Instead of enacting at once a national code of sanitary laws, it might be well for the general government to dispose of one question at a time. We might begin, for instance, with the national quarantine law, which should be uniform in all States, and, of course, supersede all State laws on that subject, instead of the present conflicting laws in the several States. We of the State of Washington are especially exposed. We have a large and rapidly-increasing trade with the sea-ports of China, where small-pox and other contagious diseases are constantly present. We also have a foreign country on our northerly border. It is neither fair nor equitable that this State should be compelled to assume the responsibility of preventing the introduction of contagious diseases when all of the benefit and none of the expense would be shared by our neighboring inland States.

The congressional act of February 15, 1893, though passed in face of a cholera epidemic, falls far short of the requirements in exempting from its scope "such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality." The Marine Hospital Service should have paramount authority in this matter, making the requirements uniform and permitting States to attend to their

¹ The writer of this article is a firm believer in the purification of public water supplies by filtration. He does not favor any particular mechanical or other system, whether slow or rapid, but urges each community to determine by impartial scientific investigation which of the various systems of filtration is best adapted to its own local use. F. J. F.

internal affairs exclusively. We should no more be called upon to contend, as a State, against the introduction of contagious diseases than to assume the responsibility of repelling an invasion of armed troops.

Very truly yours,


H. MCGRAW,

Governor of the State of Washington.

Infected Atmosphere.¹

BY GUY HINSDALE, M.D.,

Philadelphia.

HE air we breathe is a fertile subject for scientific investigation. Twenty years ago we knew comparatively little about the organic constituents of the atmosphere. Beyond the evidence of our senses in detecting bad air, prompting us to apply the general principles of ventilation, and beyond the well-grounded belief and knowledge that change of air to the mountain or the sea would favor the recovery of cases that resisted other measures, little was known.

Three names stand out prominently in the work which marks the beginning of a new epoch in this field—Pasteur, Tyndall, and John Bastian. Although the labors of the last-named investigator were extensive, and his conclusions produced an immense impression at the time they were published, they were entirely overthrown by Tyndall and Pasteur, and have now nearly passed into oblivion.

Bastian, twenty years ago, championed the doctrine of spontaneous generation. But the best minds of England and France not only proved him incorrect, but | idly established the fact that all germs come from pre-existing germs, and that germ-life cannot arise *de novo*. Every one among us knows to-day that every aseptic dressing, every aseptic solution, so remains, provided it be not contaminated from without. The purest air we ever breathe contains some particles in suspension. This floating matter may be entirely innocuous, or it may consist of dangerous germs that seek lodgement in our throats, our lungs, our intestines,

¹ Delivered before the Class of Nurses in Training at the Orthopaedic Hospital and Infirmary for Nervous Diseases, Philadelphia. From the Medical News.

a crevice in the skin, or some other vulnerable point. Besides the floating matter in the atmosphere, embracing many germs that are well-known to be virulent, it has been commonly believed by physicians and sanitarians "that the discomfort and dangers to health and life which had been known to exist, sometimes at least, in unventilated rooms occupied by a number of human beings, were largely or entirely due to peculiar organic matters contained in the air expired by these persons, and that the increase in carbonic acid due to respiration had but little effect in producing these results, its chief importance being that it furnished a convenient means of determining the amount of vitiation of the air." In this connection I take the opportunity of calling attention to the latest researches on this subject, just published as one of the "Smithsonian Contributions to Knowledge," by Drs. John S. Billings, S. Weir Mitchell, of our own staff, and Dr. D. H. Bergey of the Laboratory of Hygiene of the University of Pennsylvania.

Experimenters hitherto have reported various results, but the majority have, of late, denied that the exhaled breath of healthy human beings, or of animals, contains a poisonous or organic alkaloid, or any poisonous product other than carbonic acid.

Dr. Bergey began by causing a man to breathe for from twenty to thirty minutes, so that the expired air should pass through sterilized melted gelatin, which was then preserved as a culture for from twenty to thirty days. In the first trial six, and in the second two colonies of common air organisms developed; but when special care was taken to thoroughly sterilize the vessels used, the result was that in two consecutive trials the gelatin remained sterile. Epithelial scales and other matters were sought for by condensing the vapor of the exhaled breath and examining the product with the microscope. In six preparations thus made no bacteria or epithelial cells were found.

Experimenters in this field find that in one day a healthy man will exhale over a thousand gallons of air, and from six to twelve ounces of moisture. There is more or less ammonia in the product exhaled, the more where the teeth are allowed to decay and proper cleanliness is not observed. In examining the breath from a consumptive, Dr. Bergey found that the fluid contained a smaller proportion of ammonia, and a larger amount of oxidizable matter than did fluid similarly collected from a healthy man. No organic alkaloids were found.

It was found in attempting to condense the moisture of the air of hospital wards that the placing of a dust-filter in front of the condensing apparatus causes a marked reduction in the proportion of ammonia in the condensed fluid.

Drs. Billings, Mitchell, and Bergey made a series of experiments by injecting into animals the fluid condensed from the air expired by healthy persons, and also by a man, whom you may remember to have seen in our clinic, whose larynx has been removed and who breathes through a tracheal fistula. In the last case the possibility of contamination of air in the mouth was of course excluded. The injections were made into the general circulation in rabbits, guinea-pigs, and white rats. The results of the subsequent examination showed that there was no special disease or degeneration in the organs of these animals; in other words, there was no organic poison.

The conclusion from this experimental work is that the injurious effects of air expired by healthy animals and men are due entirely to the diminution of oxygen, or the increase of carbonic acid, or to a combination of these two factors. It would appear also quite improbable that the minute quantity of organic matter contained in the air expired from human lungs has any deleterious influence upon men who inhale it in ordinary rooms, and hence it is probably unnecessary to take this factor into account in providing for the ventilation of such rooms.

The experiments showed, secondly, that in ordinary quiet respiration no bacteria, epithelial scales, or particles of dead tissue are contained in the expired air. But in the act of coughing, or sneezing, such organisms or particles may probably be thrown out.

Thirdly, the ammonia exhaled is chiefly due to the products of decomposition of organic matter, which is constantly going on in the mouth and pharynx.

Fourthly, the air of hospital wards was found to be contaminated chiefly by minute particles,—dust. This contained micro-organisms capable of producing inflammation and suppuration.

Fifthly, no peculiar volatile poisonous matter in the air expired by healthy men and animals was found, save carbonic acid.

It was also found in these investigations, as in others preceding them, that animals may be habituated to an atmosphere so vitiated by a loss of oxygen and an increase of carbonic acid, that

a similar animal brought into it from fresh air dies almost immediately. It would appear that immunity to vitiated air may exist normally in certain mice, or be produced in them. It would be an interesting research to determine what races of men can endure the greatest foulness of atmosphere. One who reads the testimony of Arctic explorers, from Dr. Kane to Caspar Whitney, cannot fail to be impressed by the tolerance which the Esquimaux Indians show in this regard.

In the excessive cold of the Arctic regions the consumption of oxygen increases as the temperature diminishes, and the demand for oxygen is more urgent than in temperate climates. Drs. Billings, Mitchell, and Bergey say that the proportion of increase of carbonic acid and of diminution of oxygen, which has been found to exist in badly-ventilated schools, theatres, or barracks, is not sufficiently great to satisfactorily account for the great discomfort which such conditions produce in many persons, and there is no evidence to show that such an amount of change in the normal proportion of these gases has any influence upon the increase of disease and death-rates, which statistical evidence has shown to exist among persons living in crowded and unventilated rooms. The causes of the increased death-rate under these circumstances are chiefly pulmonary tuberculosis and pneumonia arising from the access of infected dust to the air-passages. It is also pointed out that impure atmospheres may affect the vitality and bactericidal powers of the cells and fluids of the upper air-passages with which they come in contact, and may thus predispose us to infections, the potential causes of which are almost everywhere present, and especially in the upper air-passages and in the alimentary canal of even the healthiest persons. Whether such be the cause or not we do not know ; future studies may enlighten us.

The recent observations of Dr. Irwin H. Hance¹ at the Adirondack Cottage Sanitarium ought to dispel some of the ill-grounded fears of the danger of contracting tuberculosis by mere contact with patients suffering from this disease. Needless prejudice has no doubt been aroused by ignorance of the precise manner in which tuberculosis may be communicated and hardship entailed on the unfortunate subjects. We know that hospitals, private dwellings, and conveyances do become infected, but we doubt if the patient infects by mere contact, much less by his

¹ Medical Record, New York, December 28, 1895.

breath. It is through the sputum, when dried and distributed through the atmosphere, that the chief mode of infection operates. Dr. Hance quotes the investigations of Celli and Guarnieri, who found the expired air of tubercular patients free from tubercle bacilli, and also that air blown by a bellows over and through sputum very rich in bacilli remained free from these germs. Seven other experimenters made similar observations. For two months Tappeiner¹ caused a woman with advanced phthisis to cough through an opening into a wooden box in which were two guinea-pigs; at the end of that time they were killed and found to be sound.

I report Dr. Hance's observations as they are of great practical value to a proper understanding of this subject. Dr. Hance examined the dust taken from eighteen buildings belonging to the sanitarium, some of these having been occupied for eleven years by consumptives. The dust was taken from the darkest and most likely to be infected spots. The first group of four buildings consisted of the main building (parlor, sitting-room, and public library); the infirmary, where all the acutely sick are sent, the oldest cottage, and the most recently built cottage. One square yard of dust from each of these buildings was collected and ten guinea-pigs inoculated with it. From each of the remaining thirteen cottages a half a square yard of dust was taken and three guinea-pigs inoculated. These inoculated animals were kept from one to three months and then killed and microscopically examined. Five were found to have had tuberculosis, four others having died on the third to sixth day of other infectious diseases. The five that had tuberculosis constituted just one-half of the number of pigs inoculated with dust from the oldest cottage on the grounds, accommodating two patients, always advanced cases, one of them having been complained of by his room-mate for spitting around the cottage.

It was thus scientifically proven that in this case carelessness and disobedience of rules, which a weak and sickly man is prone to break, were responsible for the infection of a cottage, thereby rendering it dangerous to himself and others.

On the other hand, the remaining sixteen buildings, some of which had been occupied for ten years by consumptives, were absolutely free from infectious material.

Such, then, are the results in a sanitarium favorably located

¹ *Archiv f. Med.*, Bd. XXIX, S. 59.

in the Adirondack Mountains, presided over by one who is giving the best years of his life to the scientific treatment of tuberculosis at the bedside and in the laboratory.

But what may we expect to find in the city hospital, where clouds of dust sweep over us from we know not where, and smoke from factories and locomotives poison the atmosphere?

Cornet collected dust from the walls and head-boards of beds in seven of the hospitals of Berlin where phthysical patients were treated, and inoculated ninety-four animals. Fifteen out of twenty-one rooms furnished tuberculous matter. Of the ninety-four animals, fifty-two died of other diseases; of the remaining animals, killed after forty days, twenty were tuberculous and twenty-two were sound. Tests of dust from the walls of houses of fifty-three private patients affected with tuberculosis were introduced into 168 animals, of which ninety died soon after the injection, thirty-four were found tuberculous, and the remainder sound. In the aggregate about one-fifth of the animals submitted to these tests were found to have become tuberculous. If acute intercurrent disease could have been avoided, the proportion no doubt would have been still greater, as many animals died of some acute infection within two or three days. Cornet found that in no case was the dust infectious when gathered from rooms where cups and cuspidors were used exclusively to receive the sputum. We have seen that here again Dr. Hance has corroborated Cornet's result.

Dr. Hance examined the dust from the wards of a large city hospital occupied by tuberculous patients of both sexes. Out of nine pigs inoculated, five died of acute infection within three days. The four living pigs were killed at the end of sixty days, and one had well-advanced tuberculosis.

Nurses, as a class, are unquestionably very liable to contract phthisis, but I do not believe that in this country the liability is anything like what is said to exist in Europe. The religious orders throughout the continent supply nurses for most of the large hospitals, and it is no doubt true that close confinement in convents and the subsequent hard work and exposure to disease renders them an easy prey to tuberculosis. It has been said that, on an examination of the records for twenty-five of thirty-eight European nursing societies, 62 per cent. died of tuberculosis. These records gave the cause of death in 4000 of the members.

I do not know that any one has made investigation of the

causes of death among American nurses in general; it is an important subject for study. We have it, however, on the authority of Dr. Herman M. Biggs, that in one of the New York hospitals as many as eleven nurses and orderlies, previously healthy, had been dismissed within a little more than two years because suffering from tuberculosis. It was an over-crowded and poorly-ventilated institution.

I think I have thus made plain that dust is the abomination to be shunned. We shall probably never live where we can absolutely avoid it, but we can do a great deal towards preventing its virulent character. If the doctrine of spontaneous generation had been established, little encouragement might be expected in a fight against infectious diseases, but, as Pasteur said, thirty years ago, "Man has it in his power to cause parasitic diseases to disappear off the surface of the globe." Prevention, like charity, properly begins at home; and eternal vigilance is the price of safety. We can point with pride to the perfection of neatness seen in this hospital. In the first place, its situation is not so exposed as in the case of some institutions. Its construction with marble and hardwood floors, its staircases of marble and iron, its painted walls and ceilings, the use of steam radiators, and the best appliances which a liberal management can furnish, go far to insure a good return for the efforts made to preserve cleanliness and good order.

In our own homes few have marble floors and steam heat, and painted walls are not looked upon with favor. We can, however, make a warfare against dust. A hard-wood floor is conducive to health, because it quickly shows the presence of dust or dirt, and can easily be kept clean. But, best of all, we have sunlight. The tubercle bacillus is one of those imps that loves darkness rather than light, because his deeds are evil. There is no disinfectant so potent against tubercle bacilli as bright sunlight. The sunniest spots are the safest. In choosing a home, avoid shadows from trees or high buildings; avoid dampness, especially dampness of the soil, and, above all, make inquiry as to previous occupants, whether in your home or your hotel, and if tubercular disease has been present, and no proper disinfection or supervision of the patient has been practised, see to it that the quarters are put in proper order or secure others.

I commend to your perusal the three tracts issued by the Pennsylvania Society for the Prevention of Tuberculosis, entitled,

“How to Avoid Contracting Tuberculosis,” “How Persons Suffering with Tuberculosis can Avoid Giving it to Others,” and “How Hotel-Keepers can Assist in Preventing the Spread of Tuberculosis.”

Reminiscences of a Boarding-House.

BY L. IRWELL, M.A., B.C.L.,

Buffalo, N. Y.



THE boarding-house is an institution peculiar to this continent. It flourishes with more or less prosperity in every city, town, and mining camp from Maine to California. Its destiny is always presided over by a female, sometimes a widow, who, when left alone to fight the battle of life with the world, being possessed of the enterprise peculiar to the American, sees in the proprietorship of a boarding-house an occupation in which she can harvest a competency for her declining years. In some instances, however, a man and his wife rent a house for the benefit of some female relative, and, although the man may work, the rest of the family lives upon the proceeds of the boarding-house.

Boarding-houses are of all grades, from the elegantly-appointed mansion, furnished with every care for pleasure and luxury, where the rich man is offered a residence with all home comforts at much the same price as he would pay at the Fifth Avenue Hotel, to the shanty in the mining district, in which carpets are dispensed with and the furniture has been manufactured by the nearest carpenter.

I do not refer to either of these extreme classes, having never experienced either the one or the other. The medium-priced boarding-house, varying between \$6 and \$10 per week, is the establishment which I wish to describe. At such an abode I called last November, and as the house looked clean, I agreed to take the room which was shown to me. “There is a register here,” said the lady, “but it does not give enough heat, and next week we intend to have a stove put in. The plumber is busy, and cannot do any more work here this week.” Plumbers must have been in great demand, as no stove made its appearance during last winter, and since then I have changed my residence.

In fairness to the landlady, however, I must admit that, after being almost frozen to death for about ten weeks, she voluntarily reduced my rent fifty cents per week ! In these days of appreciated gold, we must be thankful for small mercies.

This boarding-house resembled many others in the fact that, not only was the food of the poorest quality, but it was also deficient in quantity. The oatmeal for breakfast, let me say, was seldom boiled enough ; the meat was usually dried (not fried) in that abomination, the frying-pan ; and the rissoles or hash—the never-varying lunch—were always highly flavored with onions or garlic. When eating either of these dishes I used always to try my utmost to divert my thoughts from the thrifty house-keeper who manipulated yesterday's leavings for to-day's mid-day meal, as well as from the unpleasant mincing process through which dishes of this character must pass.

To be successful as a boarding-house keeper a woman must be a good financier. This qualification is a perfect gold-mine to the humorist, but it is, figuratively speaking, death to the boarders. Too often all the butter needs is legs, and it would walk off the table, for it possesses all the necessary strength. The so-called beefsteak must be a perfect nightmare to any one possessing false teeth, and the pancakes would make admirable ammunition for a Hotchkiss gun. At the house I have mentioned above, eggs were never seen during the winter, although a young lady of a religious turn of mind was provided with *one egg for dinner* on Fridays, unless the whole party was fed upon a small portion of a large and flabby fish, caught, I should say, a week before it was cooked. With this food much stuffing or "dressing," as it is called, was provided, but, believing that discretion is the better part of valor, I always refrained from eating it. The event of the week, however, was the Sunday dinner. Sometimes it consisted of meat of a very remarkable color, which one of my fellow-sufferers named "blue lamb." More frequently we were provided with turkey or chicken, and those of us who were of a sanguine temperament used to look forward to Sunday, because we were always able to hope that the Sunday to come would be an improvement upon the one that had passed. On that day the bird that had outlived its usefulness upon the farm appeared upon the table to tempt the appetites of the boarders, but not to satisfy them, for sufficient was not given to the ten people to feed one hungry man, and even if it had been, no living being possesses

sufficiently strong teeth to masticate the flesh of such veterans as were placed upon this table. When trying to eat birds of this class, I always found myself speculating as to the number of broods of chickens each particular fowl had hatched; and this method of utilizing my thoughts often enabled me to make a fair dinner by the consumption of potatoes and bread. No matter how old or tough the bird might be, we were always invited to partake of "chicken." This was, indeed, a marked example of the addition of insult to injury. On Sunday evenings no proper meal was provided; bread and butter, tea and cake—the latter in minute quantities—formed the banquet, such as it was. As a consequence, the male residents generally went out at eleven o'clock to take a light supper, usually consisting of a beefsteak washed down by Guinness' stout. By this process we—I mean the men—managed to exist until Monday morning. How the ladies fared, I cannot tell.

But enough of the table. A word as to my fellow-victims. There was a widow who never tired of recounting to the assembled multitude the many virtues possessed by her "dear departed." There was a fanatical spinster, who, day by day, reasserted her conviction as to the crime of drinking beer. An old gentleman occupied the head of the table, and aided the digestive organs of the rest of the company by repeating the news which everybody had read in the previous day's paper. The presence of these "cranks" was evidence of the marvellous financial powers of the landlady, who evidently knew that when some of the boarders were great talkers, neither they nor their listeners would be likely to eat very much, consequently I suspect that she took loquacious persons at reduced rates. There was nothing very remarkable about the rest of the inmates of this "home." Of course, there was a boy of eighteen summers, who regarded foot-ball as the acme of human existence; equally, of course, there were married couples who talked a great deal of the time when they "kept house;" and lastly, there was the very positive, dictatorial, and generally unpleasant man, who makes remarks as to the size of the feet and the length of the curls of the representatives of the fair sex. This man usually supposes that he knows everything, his chief object in life being to impart that knowledge to other people, whether they desire it or not. He is invariably a bachelor, for the very good reason that no woman could, by any possibility, be induced to marry him. I could describe this person in detail

and with great exactness, so thoroughly do I know my own character.

Life in a boarding-house must be experienced to be appreciated. It is most thoroughly American. No European would tolerate it. The Englishman, indeed, would not even take rooms—"lodgings," he calls them—in a house in which the landlady attempted to do the waiting at table in addition to nursing a young baby. But here, where everybody is in a hurry, we must, as I said before, be thankful for small mercies, and must laugh at such trifles as indigestion and flatulency.

Military Drill in the Public Schools.¹



THE Secretary of War, in his recent annual report, "renews recommendation that the law be so amended as to extend the opportunities for military instruction, by officers of the army, to high schools of cities and normal schools of States having the requisite number of pupils;" and a bill is already pending in Congress "to establish a bureau of military education and to promote the adoption of uniform military drill in the public schools of the several States and Territories."

There is a growing conviction that American children should have healthier, better disciplined bodies, which, in these days of intense civilization, must be secured through systematic physical education. Under cover of this, military drill is brought to the front as a training which meets a great need. Army officers are not deceived as to the true object of this work in our schools; but the people at large accept the recommendation of a war secretary with misty understanding, if not positive misapprehension.

One of two positions must justify making military drill a factor in public school discipline. Either we must educate for war, or military training fills important physical demands of our growing school-boys, few of whom are out of their "teens." . . .

Able specialists declare, from a physiological stand-point, that military drill, in itself, does not meet the physical requirements of boys yet in the growing period. On the contrary, some dangers are involved when physical defects exist, which the discipline of the gymnasium should first correct. . . .

¹ Published by request of the American Humanitarian League.

The marked physical benefits which come to the cadet are the result of persistent training in the gymnasium, which is the necessary adjunct of every military school. Outside of war significance, all the benefits claimed from militarism in our schools can be even more successfully secure through the medium of systematic physical education in the various grades and the facilities of a fully-equipped gymnasium for advanced pupils, including girls as well as boys. . . .

The grace of the cadet is due to the gymnastics, not the drill. Much stress is placed upon "obedience to commands of superior officers." Gymnastic training, under the German and Swedish systems, gives fine opportunity for discipline in this direction. The actual benefits of the march, and being manipulated in large numbers, can be secured under a competent director, without handling arms, or suggesting, even remotely, the idea of carnage. . . .

However unquestioned may be the possible contingencies of any nation necessitating bloodshed, we strike at the very heart of peace when we usurp the true object of the public schools by introducing such agencies. To uniform our school-boys by law and place in their hands the implements of war (no boy will remain satisfied with a wooden gun) may, in these days of long-neglected physical development, mean soldierly bearing and the correct handling of arms, but it cannot fail to lead the imagination and desire towards bloody combat.

There was a time in the experience of this country when to be an American citizen meant being a soldier, involving the possible sacrifice of home, kindred, and life. This was the result of circumstances and conditions that do not exist to-day. Duelling, the once popular and honorable method of settling difficulties between individuals, long ago found its grave with other buried barbarisms. War, which is duelling on a larger scale, stands to-day upon the brink of the same fate. The trend of higher civilization is in the direction of humanitarian means for settling differences between nations. The heterogeneous character of this people, with conflicting ideas and varying customs, as well as the possible chance of difficulties with foreign powers, will doubtless make a limited trained military force always advisable, to be utilized in emergencies and as a last resort. This can be amply provided for through the medium of national and State military

training-schools. Our public schools should constitute the nursery of citizenship. Instead of drilling these on-coming citizens in the art of warfare, we should, in these enlightened days, teach them the doctrine of arbitration.

The idea of military training in our schools grows out of a fallacy. The boy studies the pages of American history and imbibes the idea that, somehow, *war* and *patriotism* bear synonymous relation. To root out this popular fallacy—that self-immolation at the cannon's mouth and the point of the bayonet is the most sublime loyalty which a man can express to his country—rising generations must be taught that the type of patriotism which heaven records is the citizenship which seeks the greatest good of the nation in time of peace. This is *citizenship* and *patriotism* which will never flinch in the direst extremity of duty.

FRANCES W. LEITER.

THE EFFECTS OF MILITARY DRILL ON BOYS.

DUDLEY A. SARGENT, M.D., *Director of the Hemenway Gymnasium, Harvard University, Cambridge, Mass., says:*

My principal objection to military drill as a physical exercise is that it does not, to any extent, meet the physiological demands of the body. . . . It does not increase the respiration and quicken the circulation to a sufficient extent to secure the constitutional benefits that should accrue from exercise. . . . I dislike to take from the drill one of the strongest attributes that has commended it to parents and teachers, but unless I have been misled in my observations, there is nothing in the drill itself that tends to make one erect or graceful. On the other hand, I am prepared to maintain that it tends to make him stiff and angular in his movements, as well as to droop and round his shoulders. . . .

After taking the most favorable view possible of military drill as a physical exercise, we are led to conclude that its constrained positions, and closely localized movements do not afford the essential requisites for developing the muscles, and improving the respiration and circulation, and thereby improving the general health and condition of the system. We must further conclude that, in case of any malformation, local weakness, or constitutional debility, the drill tends, by its strain upon the nerves and prolonged tension on the muscles, to increase the defects rather than to relieve them.

Finally, if the ultimate object of the drill was to prepare

young men for the life and duties of a soldier, we should be forced to conclude that the drill itself would still be defective as a means of developing the chief requisites for men in that profession.

This defect, we are pleased to state, is recognized by the great military nations of Europe, and measures are taken to give all the recruits from three to twelve months' gymnastic training to develop them as *men*, before they are expected to conform to the requirements of the soldier.—*Extract from an article in Boston Medical and Surgical Journal*, September, 1886.

LEVERETT W. CASE, *Master of Dudley School, Roxbury, Mass.*, says :

"It is a bad thing for the boys. These public street parades are especially evil things. I have known three or four boys to faint away from the fatigue and excitement on such occasions. Then, again, it teaches the boys to look forward to war, and to cherish a desire for fighting which is not desirable. It seems to me that, after twenty centuries of religious enlightenment, we ought to be able to live without fighting and the maintenance of standing armies. I believe in fostering a love of nature and peaceful intercourse between one another among school-children. Boys should be taught what will be useful to them, but they should not be taught that which would engender a desire for warfare. The Ling system of gymnastics which we now have in the grammar schools answers every purpose. It gives the school plenty of wholesome exercise, and that is all they need."

A MILITARY OPINION.

It is further urged that if our boys are drilled in school they will be prepared for war. On this point, I desire to quote the words of Lieutenant-Colonel Thomas F. Edmands, of the Boston Cadets,—

"I only know that school-drill injures the militia service; and I never saw a school successfully drilled,—that is, where the play was worth the candle. It is impracticable to teach the boys anything more than the manual of arms. It is one of the clearest cases ever invented of a little knowledge being a dangerous thing. Boys like it because they are aping the men and wear flash clothes. When they get through school their heads are so swelled by it that they think they know it all, and are unwilling to receive

any military instruction of real value to themselves or to the country.

“How about the physical benefits to be derived from the drill?”

“In Boston the effect of school drill has been to make boys round-shouldered and narrow-chested. I never saw a school company well set up in my life. Except a few of the larger ones, the boys are over-weighted by the musket they are obliged to carry.”

“Then you do not believe the drill adds much to the value of the boy as a subsequent military man?”

“The modern drill regulations are by no means adapted for work in schools under any circumstances. They need a man’s brains and muscles. Every time I tell the truth about the matter I generally raise a storm from persons illy informed upon the subject, and from the boys, whose self-conceit, engendered by this drill, should be one of the greatest arguments against its further practice.”

MILITARY DRILL FOR BOYS.

We are glad to see educators and clergymen moving against the bill to make military drill in the public schools compulsory. The Brooklyn Board of Education passed a resolution against it, requesting the Brooklyn members of the Assembly to oppose its passage. In defence of the bill it is urged that the physical benefits to be derived from regular military drill would be valuable. But physical training of various kinds is now voluntarily provided in most of the schools, and there is no more reason for prescribing the particular form than there is for compelling arithmetic to be taught in a certain way. Moreover, the bill is mandatory and would entail a great expense,—much greater, certainly, if it were to be carried out thoroughly and generally, than the \$100,000 named in it. But the gravest objection is that the bill springs from the same senseless and brutal war-spirit that is making wreck of so many public reputations, and continually threatening to embroil us with other nations. What its promoters really have in mind is, not physical exercise, not parades and displays, but the spreading in childish minds of the idea that fighting is the noblest occupation of man, that we are all the while exposed to insults and aggressions, and must be ready to whip all creation on call. Now, the boys have too much of this idea already. It is in their minds that the furibund patriotism of Lodge and Frye

finds most admiration,—in fact, so far as we have observed, its only admiration. What they need, together with their fellow-juveniles in the United States Senate, is, not military drill, but instruction in good manners, in the arts and love of peace, and in ambition to make the country decent and habitable instead of feared. We are confident that the humane and educated sentiment of the State needs only to be appealed to in order to show that it is solidly and strongly against compulsory drill in the schools.—From Editorial in *New York Nation*, April 11, 1895.

W. EVANS DARBY, LL.D., says :

In drilling children by military discipline, there is implanted in them the spirit born of the character and associations of the drill, the spirit of the soldier who is trained to kill and to destroy ; there is developed in them the war spirit, the spirit of murder. It is in vain to expect that the drill can be used and the moral influence of its associations be escaped. Military drill, therefore, of necessity favors and fosters ideas and practices which belong to the brute and barbaric side of human nature rather than to the cultured and civilized, the development of which is the object sought in the very existence of the school. It familiarizes the young with the idea of the taking of human life. It takes for granted a series of terrible fallacies that war cannot be dispensed with, that the natural state of man is hostility to his fellow-man. It sanctions and assumes the militarism of which it is a part and for which it is training. Disguise it as we may, the simple fact is "that the primary object of establishing military drill in our schools and colleges is a professional one,—that is, to give instruction in military tactics to educated young men, in order that they may be of service to the country or community in case of war," and to prepare the rank and file of future armies in the primary and elementary schools of the land. . . .

By all means let mind and body be developed to the utmost, but let it never be forgotten that there is a higher purpose in all this culture than mere destruction ; that the human race has richer possibilities than can be reached on the field of conquest, or by wasting its energies in mutual conflict ; and that the dash and vigor and *esprit de corps* developed by school games and physical exercises may find higher spheres of action than the battle-field, and a fitter outlet and more beneficent achievements than any that can be covered by the term "MILITARY."

B. O. FLOWER :

Every careful student of human life knows that the ideals and thoughts which fill the horizon of childhood color all after-life. If during the formative period the ideals which fill the child's mind be essentially noble and humane, if he be taught that his mission is to help subdue the savage in man, to transform swords into ploughshares and spears into pruning-hooks, or, in other words, to become a savior of life and a dispenser of happiness instead of a slayer of his brother and an angel of darkness, he will grow to manhood brave but gentle, manly but loving. . . .

On the other hand, the child who is drilled in the manual of arms has constantly before him the hour when he may draw the trigger which means death to a fellow-man ; he comes to love the sound of the drum-beat, and learns to long for a chance to shoulder the murderous gun. He turns to the lives of Alexander, Cæsar, and Napoleon ; dreams of fame through slaughter, of power through devastation and destruction, fill his mind, and by coming to believe it is legitimate to kill his fellow-men when ordered to by a superior officer, the highest and finest elements in his mind are benumbed. And I may say here, what I most profoundly believe, that there can never be an approach to civilization so long as the child-mind receives military drill, for the associations, ideals, and dreams which necessarily follow in the wake of warlike instruction are so at variance with the ideals which alone can redeem the world from hate, greed, and injustice, that until children are taught to entertain a profound reverence for human life, human rights, and for justice in its broadest sense, humanity will not know what true civilization is.

Protection of Food from Dust Pollution.¹

IN many cities and towns it is the custom for grocers, butchers, and other venders of food, to expose their wares in front of their shops and stores. Butchers very frequently make an unusual exposure of meats to the dust and filth of the street. Grocers expose on the side-walks in front of their stores dried fruits, smoked meats, etc.

Objections.—The dust that floats in the air contains a great

¹ Issued by the State Board of Health of Indiana.

deal of filth. It carries pulverized manure, dried catarrhal and consumptive sputum, and much other offensive matter, besides micro-organisms of all kinds. All this we must endure, to the evident disadvantage of our health, when we walk abroad in cities where dust is not kept down. It is not well, however, that we should eat dried manure and dried spittle on our meat and groceries, even if cooked.

What to do.—County health officers are hereby directed to issue written orders to all butchers and venders of meats not to expose outside their shops carcasses or parts of carcasses of any animal intended for food. Neither shall dressed meats be transported through the streets without being protected from dust.

Grocers must be ordered not to expose dressed poultry, nor uncovered smoked meats, nor uncovered dried fruits, such as apples, peaches, currants, etc., nor, indeed, any foods which may become polluted and corrupted by dust from the air in the way above described.

J. N. HURTY,
State Health Officer.

Private Disposal of Household Garbage.¹

BY D. H. GALLOWAY, PH.G., M.D.,
Chicago.



NE of the first problems which engaged my attention on taking charge of Dr. Bayard Holmes's Private Hospital was the disposal of hospital and kitchen refuse.

It was imperative that soiled dressings should not be put with other garbage to be hauled about the city and be handled by many persons. Even throwing them into a metallic vessel, to be carried from room to room and to be handled at least once more when the vessel was to be emptied, was repugnant to me. That ever-present article,—at once a nuisance and of no unlimited usefulness,—the old newspaper, seemed to be “indicated.”

When a soiled dressing was removed from a wound it was immediately rolled up in a newspaper and put into a receptacle provided for the purpose. When the morning dressings were all

¹ From the Journal of the American Medical Association.

done these small packages were made into large ones with more paper, and in this way conveyed to the furnace-room. All repulsiveness and danger were thus obviated. This led me to contrive a way to dispose of all hospital and household refuse which has been in use in this hospital, with perfect satisfaction, ever since. It is simple, inexpensive, and effective.

I require that all garbage of whatever kind be wrapped into packages with newspaper or other paper as the butcher wraps up a steak. Tin cans and other non-combustible material, of course, not included. A wire basket drains as dry as possible all garbage containing water. When the furnace is not in use it is prepared by closing all registers as well as dampers in hot air pipes, and opening all draughts. A small amount of kindling is put in the furnace and on this the packages are piled. When the furnace is full the kindling is ignited and it is left to itself. Next day the furnace will be found empty except for a small quantity of fine ashes. Even melon, lemon, and orange rinds, cobs and husks of green corn, potato-parings, coffee-grounds, etc., are completely disposed of in this way. Sometimes I have found it necessary to light a newspaper on top of the garbage in order to start a draught up the chimney, but ordinarily there is no trouble, little heat, no odor, and no smoke is noticed about the building. This applies to the summer when the furnace is not in use. I found it a little more difficult in winter, and once I thought I should be obliged to give it up. After some trials, however, I found the following method entirely satisfactory. In the morning all draughts are opened, the fire is shaken down and fresh coal put on, then the packages of garbage are put in on top of the coal. After ten or fifteen minutes the draughts are arranged as they would be if no garbage had been put in, and the next time the furnace needs attention the garbage has disappeared. After putting the packages in the furnace they should never be broken up or stirred with a poker. At first sight it would seem that a considerable amount of fuel would be required, but such is not the case. Our family consists of from twelve to twenty persons, and such a family will make a large amount of garbage each week; yet during the entire summer I did not use altogether a dollar's worth of kindling. Fruit-baskets, berry-boxes, and other readily combustible material furnished most of the fuel necessary.

This method has been in use in this hospital for more than a year, and in that time absolutely not a pound of garbage has

been put into the street, nothing but ashes, tin cans, broken glass, and crockery. The secret is in the packages. The difference between these and loose garbage in the matter of combustibility is the same as the difference between lump coal and slack coal, the one will burn where the other will extinguish a fire. How to dispose of the garbage of cities is one of the most vexing of the great economic problems of this age. Burning is a wasteful process and dumping into lakes or water-courses is disgusting and at all times a menace to the health of the community. All refuse organic matter, whether animal or vegetable, should be returned in some form to the soil as fertilizer. It is a mine of wealth wantonly wasted. If given an opportunity, nature's laboratory would transform the nauseous stuff and return it to us in fruits and flowers and a thousand other attractive forms. The present method of disposing of this vast portion of nature's labor is a heavy draught on our inheritance which must sooner or later be stopped; unless the chemist realizes his dream of making animal food in the laboratory direct from the inorganic world.

If, however, it must be destroyed, it should be by fire and not by being piled up in great dumps to breed disease, nor thrown into water where it may be conveyed to great distances spreading pestilence all the way. If it is to be burned, then the nearer the source of supply—the household—the less offence and expense will it cause. It is produced in greater or less quantity by every family, but how few exercise any care about its disposal. It is carried into the street or alley, thrown into a wooden box and then left to stew and rot and stink until the scavenger comes along and gathers it up. Even then the offence is not removed, for the box continues to emit foul odors and is a culture-ground for all sorts of disease-producing germs. Waste paper is one kind of garbage which every one ought to be able to dispose of without throwing it into the street. Yet I have literally seen hundreds of newspapers and pieces of wrapping paper from dry-goods stores, groceries, and meat markets, the last covered with grease and flies, piled about a large flat-building so that if one had set fire to the rubbish it would have seriously menaced the building. The tenants in such buildings, using steam-heat and gas-ranges, have no facilities for burning even waste paper, but there is always a furnace in the basement, and provision should be made for conveying to the furnace and there burning it. Many of the tenants of these large buildings make a practice of throwing all waste

paper out of the windows. This practice is an offence to the rest of the community and should not be tolerated. A few arrests with a nominal fine of a dollar and costs, and due notice of such arrest and fine in the daily papers, would greatly stimulate a healthy public sentiment against the practice of throwing rubbish into the street.

One very windy day I saw a woman sweep out of a vacated store enough waste paper to make a good-sized wagon-load, and this paper littered the street for a mile in the time it took me to ride that distance on a bicycle.

A most provoking, because unnecessary, nuisance is the rubbish brought by the wind and deposited in door-ways and passageways. Every householder who has any regard for the appearance of his lawns must gather up this litter two or three times a day, and only the person who gathers it up can form any conception of its great quantity. The man who deliberately throws upon the street something which he knows another must go straight-way and pick up, exhibits a selfish disregard of the rights of others which is evidence of moral degeneration or arrested development. There is one other thing to which I wish to call attention. Horses are driven about the streets dropping filth which is dried in the sun, powdered by passing vehicles, and blown by the wind into our mouths and nostrils, onto our tables and into our food. Why not require that every horse carry, attached to its harness, a receptacle into which the dung would fall? Such a thing could be of leather and not overly conspicuous. Would this not be cheaper, to say nothing of the other considerations, than to hire an army of men to go about and gather it up? No doubt this will bring an incredulous smile to the face of many a reader. People are prone to submit to anything, no matter how disgusting or dangerous, if it is time-honored. There is a feeling that because an evil *has not* been corrected it *cannot* be corrected. A few years ago the bicycle was considered an interloper upon the streets, which were held sacred to the horse. In a few more years I expect to see the tables turned by the bicycle and other machines for locomotion and transportation, and then the man who drives a horse will be compelled to take some such precautions as mentioned or be confined to certain streets or alleys.

Hurl Ball. (Schleuderball.)¹

BY S. B. WHITTINGTON,

Southern Illinois State Normal University.



GAME that has been made a prominent feature of the out-door work of the students of the Southern Illinois Normal University of Carbondale the present term is hurl ball.

This game has many advantages. It allows perfect freedom of movement and is practised in the open air. The number that may take part in this game is practically unlimited. It allows the weaker and less muscular to participate, and it is not limited to the "heavy-weight" element of the class.

Many games lose much of their force for school purposes, because they are adapted to but a limited number of those of much the same size and strength. In this game the sport is often much heightened by the inclusion of all grades, or practically so.

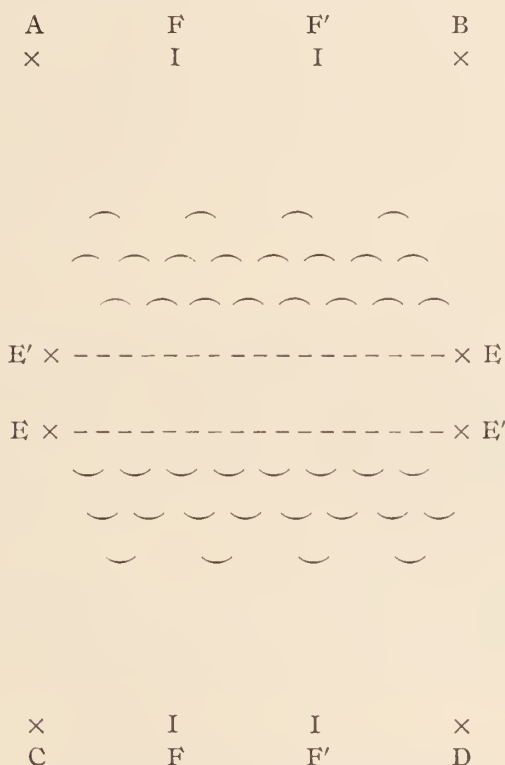
It is played with a leather-covered ball weighing from five to ten pounds. It has a rolled hand-strap attached. (Medicine balls with hand-straps are just the thing.) Those 16 years or over should play with a seven or eight pound ball. For boys below this age five pounds will suffice.

A field (A, B, C, D) from 100 to 120 yards long by 50 yards wide is quite sufficient, and it may be played upon a smaller field than this.

Stakes are driven some fifteen feet on either side of the centre (E, E') to mark the starting points. At the extreme ends of the grounds are placed high stakes (F, F') with flags attached, between which the ball must come to score. When the players are divided, they take their stands near the centre between the starting marks (E, E'). The ball is given by lot to one side for beginning, and that side chooses the man they wish to run from any point on his side to the starting line (E, E'). When the ball is caught before it alights the ground by the opposition, the catcher is allowed to take three steps towards the goal at his front. But, if the ball alights the ground, it must be thrown from where it is

¹ From Mind and Body.

picked up and by the one who picks it up. Since there is an immense advantage in having a short run over standing and throwing, it puts each side "on its mettle" to do good catching. Now it must be understood that three steps are to be taken, no more, no less. This will prove an interesting and valuable feature. The struggle is to force the ball by good catching and throwing beyond the opposition to alight the ground between the goals (F, F') and beyond, and no score can be made until the ball



alights, it must not roll through the goal. If one side has covered one point in doing so, it is well to change sides and begin the game anew. A time may be fixed for the duration of the game, which is to be regulated by the teacher beforehand, who is prompted by the strength and age of the pupils and the weather prevailing.

The catching is done in the arms rather than in the hands. The game is made more difficult by lengthening the field or by

placing the goals, between which the ball must pass, closer together, or by doing both. In a recent match game, when forty men were playing, twenty on a side, the arrangement of men on one side was about as follows: eight men formed the front, placed about equal distances apart. Back of these and between were the next eight men; and still back of these, for the long shots, were the four remaining.

It is a nice piece of work to place each man where he can play best and next the one with whom he can play best. A great advantage is gained when the men learn to move in a body and keep the same relative positions. If a strong play is made to one side or back by the opposition, and the whole body moves together and quickly, it is by this good position of the whole body to resist the manœuvres and skill of the enemy. When a ball goes to a field that could be covered by two or more players equally well, it should be the business of the captain to call the man that is to catch it. It prevents collisions and puts up a stronger game.

There is any amount of opportunity offered for quick, decisive mind action. A mental exercise of no mean importance. It will be interesting to note that this game includes most of the good properties of foot-ball, without the objectional features. We have played it at this school frequently and not the slightest injury was done, while, on the other hand, the mother boy has taken a part, has taken an interest, and will be quite a man when he gets home.

I do not see any objections why this game should not be played by girls. In fact, they do play it with zest and admirable skill. A lighter ball should certainly be employed. This game is one of the most favorite German national games.

The Prevention of Blindness.¹



THE preparation of this circular is the result of representations made to the State Board of Health by two prominent medical societies of the city of Philadelphia at different times, and each without the knowledge of the action of the other. The belief upon which it is based may therefore be said to represent the deliberate

¹ Issued by the State Board of Health of Pennsylvania.

opinion and judgment of the medical profession at the present day. The facts presented are drawn from the communications above referred to, but they may be found abundantly in the current medical literature of the past ten years. It is not necessary to enter into an argument to show that every case of blindness is a money-loss to the State, or that, consequently, every case of blindness prevented will be a money-gain to the State. The following facts, therefore, have a significance to the political economist quite apart from their bearing upon a most important factor in the world's total of suffering and privation.

(1) There is in the State of Pennsylvania, as in the United States, an apparently rapid increase in the number of the blind.

(2) A large percentage of the blindness is due to the disease known as purulent ophthalmia of the new-born.

(3) By the use of known methods this could be very materially lessened.

RAPID INCREASE OF BLINDNESS IN PENNSYLVANIA.

When we compare the report of the United States census of 1870 with that of 1880, we find that the increase of population for Pennsylvania for that period was 21.6 per cent., while the apparent increase in blindness for the same period was 119.8 per cent., showing that blindness increased over five times more rapidly than the population. In New York the figures are even more startling.

In the second place, the most important factor in the production of blindness is the purulent ophthalmia of infants, or ophthalmia neonatorum. Fuchs found that among 3204 cases of blindness collected from asylums in different parts of Europe 23.5 per cent. were due to ophthalmia neonatorum. In the New York Institution for the Blind, at Batavia, 23.4 per cent. of the inmates are there as the result of the same disease.

Horner has shown that among 100 blind asylums in different countries the variation was from 20 to 79 per cent.,—average 33 per cent.

Haussmann gives the number in the asylum in Copenhagen made blind by this disease as 8 per cent., in Berlin 20 per cent., in Vienna 30 per cent., in Paris 45 per cent.

According to the report of the Royal Commission on the Blind, of the English government, published in 1889, 30 per cent. of the inmates of the institutions and 7000 persons in the

United Kingdom have lost their sight from this cause. Professor Magnus, of Breslau, finds that no less than 72 per cent. of all who become blind during the first year of life are rendered so by purulent ophthalmia; and even of those who become blind before the twentieth year of life, it constitutes as much as 23.50 per cent. Looking at the subject in another way, he shows that of 10,000 children under 5 years of age, 4.28 are blinded by purulent ophthalmia. In the blind asylums of Switzerland the proportion who have lost their sight from this disease is 26 per cent.; in the asylums of Austria, Hungary, and Italy about 20 per cent.; while in Spain and Belgium it falls to about 11 or 12 per cent. An investigation into the causes of the blindness of 167 inmates of the Pennsylvania Institution for the Blind, made by Dr. George C. Harlan, of Philadelphia, developed the fact that fifty-five owed their affliction to purulent ophthalmia, and that more than half of these cases occurred in infancy.

Whenever the fact is demonstrated that a disease is infectious, contagious, communicable from person to person, either by direct contact or through the medium of infected articles, it becomes the duty of the physician and the sanitarian to discover, if possible, the source and character of this infectious matter, and to devise means for preventing its transmission.

Ophthalmia of the new-born is an infectious disease, and can only occur after the infectious matter has come into actual and somewhat prolonged contact with the conjunctiva. The noxious matter is in every instance derived from an inflamed vagina (or urethra), or from another eye. In the great majority of cases infection takes place from the vagina, and it is to be remembered that the disease is not caused by the secretion of a specific (gonorrhœal) catarrh only, but that it may be produced by the secretion of a simple leucorrhœa, or at least by what is recognized as such clinically.

As regards the period when infection occurs, this may take place either during or immediately after birth, or at some subsequent moment. If the former, the disease manifests itself by redness and puffiness of the lids at from the second to the fifth day; if it does not appear until later, infection has taken place subsequent to birth. This may happen by the transference of secretion to the child's eyes in various ways, as by the hands of the attendant, by soiled linen or sponges, etc.; but the lochial discharge, as such, has been found to be incapable of causing the affection, if the woman be free from inflammatory disease.

The discovery of the gonococcus has led investigators to examine the secretion of purulent ophthalmia for the same organism,—and in the vast majority of cases examined it has been found to be present therein also; still, different observers appear to have reached results not entirely in accordance as to the relative frequency with which this organism is present. Cases do occur in which it cannot be found. Hence the attempt has been made from a bacteriological point of view to recognize different forms of the disease,—a specific form and simple inflammatory forms. As stated above, the *secretion of simple vaginal catarrhs* is capable of causing purulent ophthalmia.

Formerly this disease was attributed to a variety of causes, such as injuries received by the eyes during birth, icterus, chilling of the body, or intense light, but these views are, of course, no longer entertained.

It is hardly too much to say that *no one should become blind from this disease*; not only because it is quite amenable to treatment, if this be instituted from the beginning, but because the disease itself can be prevented in most instances if those who have the care of mother and child understand the nature of the affection.

From the facts and figures above given it will be seen that this is simply another way of saying that *one-third of those who are now blind might have been saved from this calamity*.

It will at once occur to the physician that if unhealthy discharges from the vagina of the mother are the cause and the sole cause of this affection, it is his duty to cure all conditions producing such discharges during pregnancy. If he does not succeed in this he can at least render them harmless by washing out the vagina with a disinfectant solution during labor. The physician, however, will usually be sufficiently alive to the importance of this subject, and will also be competent to recognize and to treat cases of the disease when it has become fully developed, and thus prevent its termination in blindness. Dr. Schneidman, in a recent paper before the Philadelphia County Medical Society, says that "perfect recovery without damage to the cornea" is always attainable by prompt, vigorous treatment and assiduous attention. Preventive and not remedial measures are, however, the subject of this circular.

The plan now adopted by scientific physicians is that known as "the *Credé* method," from the name of the physician who in-

troduced it. It consists in first carefully washing out the eyes of the child with pure warm water, and then dropping into them one or two drops of a 2-per-cent. solution of nitrate of silver. If all the environments of the child are hygienic and the physician is sure of the healthy condition of the vaginal mucous membrane, the first measure will be all that is necessary; but, under all other circumstances, the second should never be neglected. The proof of the good results of this simple precaution is overwhelming.

Dr. Lucian Howe, of Buffalo, has collected two lists of cases, the first showing the result obtained and published by different obstetricians who used no treatment for the eyes of 8798 children born under their care. Among these 8.66 per cent. had ophthalmia in a greater or less degree.

The second list of 8574 shows the result of the Credé treatment. In these cases there were only 0.65 per cent. In the lying-in hospital of Leipsic, where Credé instituted his own method, the percentage fell from $7\frac{1}{2}$ to $\frac{1}{2}$ per cent. The advantages of Credé's method have been recognized by its official recommendation in Austria, Germany, Switzerland, France, and in this country.

In view of these incontrovertible facts it becomes the duty of all physicians who are engaged in the instruction of nurses and midwives, under whose care rather than that of the thoroughly qualified physician these cases are apt to occur, to impress upon them the terrible risks incurred by neglect of cleanliness in this particular, and to require of them an intelligent appreciation of the importance of the subject and an acquaintance with the signs of commencing inflammation of the eyes and of the methods above detailed.

This class of attendants on lying-in women should not, however, attempt to conduct the prolonged treatment of a case of inflamed eyes of the new-born infant by themselves, but should place the case under the charge of a physician at the earliest possible moment. In many European countries this is made obligatory. The State of New York has had a law in operation for several years, requiring midwives and nurses to report every case of inflamed or reddened eyes, occurring within two weeks after birth, to some legally qualified practitioner within six hours after discovery, under penalty of a fine or imprisonment or both.

Deeply impressed with the importance of this subject and feeling the responsibility which rested upon it to use its authority for the diminution of this serious disability, the State Board of Health of Pennsylvania in the year 1892 adopted the following resolution :

FOR THE PREVENTION OF BLINDNESS.

Whenever, in any city, borough, village, or place in this State having no health authority of its own, any nurse, midwife, or other person, not a legally qualified practitioner of medicine, shall notice inflammation of the eyes or redness of the lids in a new-born child under his or her care, it shall be the duty of such person to report the same to some legally qualified practitioner of medicine, within twelve hours of the time the disease is first noticed.

The above regulation has now been superseded by the Act of June 26, A. D. 1895, which is hereby adopted as a regulation of the State Board of Health and which reads as follows :

AN ACT

For the prevention of blindness, imposing a duty upon all midwives, nurses, or other persons having the care of infants, and also upon the health officer, and fixing a penalty for neglect thereof.

WHEREAS, Statistics compiled in this country and Europe demonstrate that fully twenty-five per centum of the blind owe their affliction to an inflammation of the conjunctiva appearing a few days after birth ;

AND WHEREAS, Experience has proved that the inflammation can be cured and the eyesight saved in the majority of cases if treatment be instituted at an early stage of the disease ;

AND WHEREAS, Destruction of the eyes and blindness are usually the result of delay of treatment :

SECTION I. BE IT ENACTED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE COMMONWEALTH OF PENNSYLVANIA IN GENERAL ASSEMBLY MET, AND IT IS HEREBY SO ENACTED, That should one or both eyes of an infant become inflamed or swollen or reddened at any time within two weeks after birth, it shall be the duty of the midwife or nurse, or other person having the care of such infant, to report in writing, within six hours after the discovery thereof, to the health officer or a legally quali-

fied practitioner of the city, town, or district in which the mother of the child resides, the fact that such inflammation or swelling or redness exists.

SEC. 2. That it shall be the duty of said health officer, immediately upon receipt of said written report, to notify the parents or the person having charge of said infant of the danger to the eye or eyes of said infants by reason of said condition from neglect of proper treatment of the same, and he shall also enclose to them directions for the proper treatment thereof.

SEC. 3. Every health officer shall furnish a copy of this act to each person who is known to him to act as midwife or nurse in the city or town for which such health officer is appointed, and the secretary of State shall cause a sufficient number of copies of this act to be printed and supply the same to such health officers on application.

SEC. 4. Any failure to comply with the provisions of this act shall be punishable by fine not to exceed two hundred dollars, or imprisonment not to exceed thirty days, or both.

Approved—The 26th day of June, A.D. 1895.

DANIEL H. HASTINGS.

In pursuance of the purposes of the above-cited act and regulation the State Board of Health issues the following form as a guide to health officers in the discharge of the duty assigned to them in Sec. 2.

HEALTH OFFICER'S NOTIFICATION.

To 189
No. Street.

In accordance with Section 2 of the Act of June 26, 1895, for the "Prevention of Blindness," it is my duty to notify you that the infant reported as having swollen or reddened eyes at your residence or under your care is in great danger of losing its sight unless the following directions are carefully and fully complied with:

DIRECTIONS TO THE MIDWIFE OR NURSE.

(1) Gently open the lids and wash out the eyes with pure lukewarm water which has been boiled, using a clean, soft piece of old linen or muslin or a pledget of absorbent cotton, *not* a sponge.

(2) Then immediately drop into each eye one or two drops of a 2-per-cent. solution of nitrate of silver. The appended prescription for this solution may be cut off and sent to the apothecary.

(3) Half an hour later wash out the eyes with warm salt and water (a teaspoonful of table salt to a pint of boiled water), or with a solution of boric acid (ten grains to two tablespoonfuls of boiled water), and continue this last application every hour or two until the eyes are well, gradually lengthening the time.

This disease is very catching and very dangerous even to grown-up persons. Therefore boil or burn all cloths that have touched the eyes, avoid kissing the child, wash your hands after bathing the eyes, and allow no one else to use the same basin.

OFFICIAL PRESCRIPTION AUTHORIZED BY THE STATE BOARD OF HEALTH.

R Argent. nitrat. cryst. gr. i.
Aq. destillat. ℥℥ i.
Ft. solutio.

SIG.—Drop one or two drops into each eye, *once only*.
For external use only.

. *Health Officer.*

Care and Management of Dairies.¹

NO building shall be used for stabling cows for dairy purposes which is not well lighted, ventilated, drained, and constructed.

No building shall be used for stabling cows for dairy purposes which is not provided with a suitable floor, laid with proper grades and channels to carry off all drainage; if a public sewer abuts the premises upon which such buildings are situated they shall be connected therewith and furnished with proper sanitary traps.

No building shall be used for stabling cows for dairy purposes which is not provided with good and sufficient feeding troughs or boxes, and with a covered water-tight receptacle outside the building for the reception of dung or other refuse.

No water-closet, privy, cesspool, urinal, inhabited room, or workshop shall be located within any building or shed used for stabling cows for dairy purposes, or for the storage of milk or cream; nor shall any fowl, hog, horse, sheep, or goat be kept in any room used for such purpose.

No space in buildings or sheds used for stabling cows shall be less than 500 cubic feet for each cow, and the stalls therefore shall not be less than four feet in width.

¹ Adopted by the State Board of Health of Indiana, March 12, 1896.

It shall be the duty of each person using any premises for keeping cows for dairy purposes to keep such premises thoroughly clean and in good repair and well painted or whitewashed at all times.

It shall be the duty of each person using any premises for keeping cows for dairy purposes to cause the building in which cows are kept to be thoroughly cleaned and to remove all dung from the premises so as to prevent its accumulation in great quantities.

Every person keeping cows for the production of milk for sale shall cause every cow to be cleaned every day and to be properly fed and watered.

Every person using any premises for keeping cows shall cause the yard used in connection therewith to be provided with a proper receptacle for drinking-water for such cows; none but fresh, clean water to be used in such receptacle.

Any enclosure in which cows are kept shall be graded and drained so as to keep the surface reasonably dry and to prevent the accumulation of water therein, except as may be permitted for the purpose of supplying drinking-water; no garbage, urine, faecal matter, or similar substances shall be placed or allowed to remain in such enclosure, and no open drain shall be allowed to run through it.

Any person using any premises for keeping cows for dairy purposes shall provide and use a sufficient number of receptacles, made of non-absorbent materials, for the reception of storage and delivery of milk, and shall cause all milk to be removed without delay from the room in which the cows are kept.

No milk shall be kept in ice-boxes or refrigerators which are in any way connected with sewers or cesspools, nor shall any milk be kept in the same compartment of any ice-box or refrigerator in which meats or other articles of food are kept.

All cans, measures, and other receptacles for milk shall be scalded with boiling water or live steam daily; they must not be rinsed in cold water before using, for the water may not be pure and some of it remaining in the vessels may contaminate the milk. All milk-cans coming from the dairies to dealers must be properly cleaned as above before returning to producer, thoroughly aired and kept turned upsidedown in a cool place.

All milk shall be strained through wire-cloth strainers and shall be cooled to fifty-eight degrees within forty-five min-

utes after it is drawn from the cow. In winter weather said cooler should be guarded against freezing. The milk shall not exceed 60° F. when delivered to the consumer or dealer.

All milk-cans delivered to creameries or dealers in the city shall be covered with air-tight lids, and when conveyed in open wagons shall be covered with canvas while being so conveyed, said canvas to be kept clean by frequent washing.

All stripping as well as first part of milk shall be delivered. The night's and morning's milk shall not be mixed. No milk shall be delivered that is taken from a cow that has calved within twelve days, or from a cow that will come in or calve inside of sixty days.

Cows shall not be fed on feed which will impart a disagreeable flavor to milk, or upon any food which will not produce milk of a standard richness, or any sour, damaged feed or ensilage.

It shall be the duty of any person having charge or control of any premises upon which cows are kept to notify the secretary of the board of health of the existence of any contagious or infectious disease among such cows immediately upon the discovery thereof, and to thoroughly isolate any cow or cows affected, and to exercise such other precautions as may be directed, in writing, by the said secretary.

It shall be the duty of any person owning or having control of cows used for the production of milk for sale or exchange to submit said cows to the tuberculin test for tuberculosis, on the written order of the secretary of the board of health.

CONTAGIOUS DISEASES.

It shall be the duty of any person having charge or control of any premises upon which milk or cream is produced, handled, stored, or distributed, to notify the secretary of the board of health immediately upon the discovery of any case of Asiatic cholera, croup, diphtheria, measles, membranous croup, scarlet fever, small-pox, typhoid fever, typhus fever, or any other contagious or infectious diseases upon such premises. No milk or cream shall be sold, exchanged, given away, or in any other manner distributed from such infectious premises until all danger of spread of disease shall be removed and the secretary certifies to that effect. No person who attends cows or milks them, or who has the care of handling of vessels for the sale, storage, or distribu-

tion of milk or cream, shall enter any place or premises wherein exists any of the diseases mentioned herein, nor shall any such have any communication, direct or indirect, with any person who resides in or is an occupant of such infected place. Strict cleanliness of the hands and person of milkers and those engaged in the handling of milk or cream, and of the bodies of cows, especially of the udders and teats, must be enforced at all times, to the end that no impurity or foreign substance may be added to the milk or cream, such addition being declared adulteration by the statute.

No person shall add water or any other foreign substances to milk or cream offered or intended for sale or exchange. Milk offered for sale as whole milk or sold as such, which contains more than 87 per cent. of watery fluid, or less than 13 per cent. of milk solids, including 3.7 per cent. of butter fat, is *prima facie* watered, and such watering is declared an adulteration by the State statutes, the punishment for which is a fine of not less than twenty-five dollars for each and every offence.

Poisoning by Stale Eggs.

Dr. Cameron has reported the occurrence of vomiting and purging in seventy-four nuns and girl pupils in the boarding-school attached to a convent in Limerick, following a dinner at which mutton and a custard composed of eggs, milk, corn-flour, and sugar were eaten. The corn-flour was suspected to contain arsenic, but analysis showed it to be free from poison of any kind, and to be of good quality. The sugar also proved to be pure. No other constituents of the meal could be obtained. The vomit and the stools were intensely green from the presence of biliary matter, but careful analysis failed to disclose the presence of ordinary poison. The viscera of two patients who had succumbed were also examined, and no poison was found. Ptomaines were found present, but in small quantity. The milk used had been boiled, and the meat was above suspicion. The eggs, however, were not fresh, and one presented a reddish-brown color and was thought to be bad. Some of the custard, given to pigs, induced severe diarrhoea.—*Dublin Medical Journal*.

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COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Appendicitis.

WHILE not thoroughly appropriate for a popular health journal, yet appendicitis has become such a popular disease, and occupies the public mind to such an extent, that a few words may not be out of place.

We are impelled to write these words because we are compelled to believe that the dogmatic, assertive teaching of many surgeons that there is no such thing as a *medical* treatment of appendicitis, and that all cases call for immediate operative interference, is a dangerous, damaging doctrine, that should not go unchallenged.

The brickmaker would like to see every house in the land built of brick; while the lumber dealer is honestly satisfied that wood is decidedly preferable. He who makes terra-cotta pipes believes that they are good sewers, while he who deals in iron conduits is convinced that terra-cotta is no good.

We are all swayed, more or less, by prejudice, and prejudice always sways us to the side of self-interest; this is not intended as a reflection upon any one or any class, it is merely a statement of a physiological fact, that one's judgment is generally prejudiced towards one's own interests; not always, but most always.

Of course it is to the interest of the surgeon to have all cases of appendicitis operated upon, and he honestly and sincerely argues that his stand is not inimical to the interest of the attend-

ing physician, the number of whose professional visits will be, most likely, just as great with as without an operation, hence, he can see no reason why he should not be called in to operate, and, seeing no reason against it, he honestly and logically concludes that the operative treatment of appendicitis is the only treatment worthy of consideration.

In some cases he is correct, but that appendicitis cannot be cured except by operation is ridiculous, unscientific, and incorrect, and it will not be claimed by any careful, conservative physician. There is a medical treatment of appendicitis, and many cases, yes, very many, have been cured thereby; we have cured them ourselves, and so have many other physicians.

We would warn our readers against the man who dogmatically contends that nothing but operative interference will cure this disease.

The rational, conservative plan is to undergo, patiently and perseveringly, an intelligent course of medical treatment, and, if this fails, then to carefully consider the advisability of operation.

Personality in the Treatment of Functional Nervous Diseases.

IN "neurasthenia," or "nervous prostration," so-called, which we have come to regard as a condition directly dependent upon a loss of balance between the constructive and destructive nutritional processes of the nervous system, the chief morbid element, the most difficult derangement to correct, and the condition upon the correction of which all else depends, is a derangement of mentality, as the result of which the logical, reasoning, analyzing, judicial powers of the mind are subordinated to the more purely impulsive or emotional mental functions, which gain complete mastery of the individual.

The power of reasoning is the highest attribute of mentality, and it is this possession that suffers first, that is first placed in abeyance, and it is a curious fact (but a fact that we have observed so frequently as to leave no room for doubt that it is a fact) that, while the reasoning powers may be sound and logical so far as everything and every one else may be concerned, they are faulty and unreliable in connection with the individual's relations with himself.

To illustrate: while the victim of "nervous prostration"

may be perfectly capable of directing, logically, large business interests, and of managing his household affairs intelligently, it not infrequently happens that he has utterly lost the power of logically reasoning upon his own subjective sensations, so that an opinion formed by himself of himself, based upon some sensation or suggestion, is in many cases not only absolutely faulty, but dangerous to health and antagonistic to recovery. We would have it clearly understood that we do not mean that such persons are hypochondriacs. A hypochondriac is one who imagines disease for which there is no foundation; those of whom we write have a foundation for their conceptions; they are not well, but they are not capable of correctly estimating the significance of their symptoms; they are not "cranks," by any means; they are really sick, but they have false conceptions of the gravity of their condition.

We have now in charge a large merchant whose business is conducted with singular sagacity, yet who becomes thoroughly convinced that he has incurable, fatal, organic heart-disease whenever windy dyspepsia caused pain or discomfort about the heart by the pressure of gases against this organ.

When the cause is removed he forgets all about his heart. This man is not capable of reasoning logically with suggestions emanating from within and yields instant obedience to any faulty, illogical, impulse arising from these suggestions. Every tale of woe that reaches the ear of the victim of nervous prostration strikes a responsive chord and suggests a similar woe to him, because of the loss of power to logically reason with himself.

The victim of nervous prostration does suffer an infinite variety of pains and aches and discomforts, all of which are but functional and curable, but all of which suggest to him the probability of serious, incurable, organic disease, all of which, in turn, become realities, because of his inability to logically struggle with these impulsive suggestions and estimate them at their true worth.

Hence it is that we have come to realize that "personality" is the most potent factor; not only this, but that it is an absolute essential in the treatment of functional nervous disorders.

The physician who cannot, by his personal influence, awaken and develop the dormant logical reasoning powers of his patient, will fail to cure his cases of nervous prostration, no matter how intelligently he may prescribe drugs, or rest cure, or massage, or

any other chemical or mechanical agency for the relief of this condition.

The secret of the success of those who have achieved reputation in the cure of functional nervous diseases is to be found in their personalities; they are endowed with attributes that enable them, at first, to supply and gradually to develop and strengthen the reasoning powers of their patients, and he who does not possess this personality had better not undertake such cases.

From what we have said it must be obvious that a specialist in nervous diseases must be born not made, since he must possess attributes which, if not natural, cannot be fully acquired.

Of course, accessory chemical or mechanical treatment is of great assistance, but without this requisite personality nothing will avail. A case, briefly recited, will make this idea clear.

A gentleman, aged 30 years, has been told he has spinal disease by several physicians, is wearing a steel jacket and has considered himself a hopeless invalid for one year past. He falls into our hands, we examine him, and fail to find any organic disease; he is a victim of so-called "nervous prostration;" each day develops, *for him*, some new and incurable disease; pain in back means Bright's disease; a little dizziness foretells apoplexy; regurgitation of food is evidence of cancer of the stomach; muscular weakness from want of exercise is regarded as a progressive paralysis; restlessness; inability to concentrate his mental faculties, convince him of approaching insanity. He was not a hypochondriac, because he really was sick; his ailments were not imaginary, but his symptoms were illogically interpreted.

Most of the symptoms of which he complained are daily experienced, without comment, by many persons, but owing to the disordered state of his reasoning powers they were allowed to assume undue importance until they mastered him, and the imaginary diseases became realities.

Now, while drugs might help, and did help, to cure this man, they would have been of no avail without the concomitant development of his logical reasoning powers, so that he would be enabled to recognize and properly appreciate the significance of his sensations.

He made a complete cure in this case, but only by a persistent, patient course of development of the reasoning faculties.

As the result now of much experience it can be confidently

asserted that "nervous prostration" cannot be cured by drugs alone; that in nervous prostration, the essential morbid element is a perversion of the logical powers, and that this condition can be successfully treated only by those who are endowed with the personal characteristics requisite for the development and strengthening of this dormant logical reasoning function.

The Prevention and Cure of Consumption.

"THE medical discoveries which were expected to do so much towards curing consumption are either disappointing to local physicians or are not much in vogue among them.

"Out of the 406 deaths in Philadelphia for the week ending at noon yesterday 101 were caused by lung troubles. This is about the usual proportion, which in the large Eastern cities is generally said to be 25 per cent. of the total.

"Some of the discoveries are still in such crude form that the doctors are not to be censured for not using them. The average will, therefore, be kept up. It is a frightful average, but it seems to hold its own in spite of all preventives and so-called cures."

The above quotation is from the *Philadelphia Inquirer*, of recent date, and will well serve as the text for a few words on the prevention and cure of the great white plague, "pulmonary consumption."

Thomas Carlyle is reported to have described the population of England as "consisting of about 39,000,000 persons, mostly fools," and just so long as fools constitute the bulk of humanity, just so long will consumption of the lungs continue to ravage and kill.

Just so long as medical men and others look for, and expect to find, a *specific drug* cure for consumption, just so long will they be disappointed. It must not be forgotten that in the ranks of the medical profession a goodly proportion of Carlyle's fools are to be found, and these are the men who look for, labor for, and expect to find a drug cure for consumption. The really intelligent, thoughtful, logical, natural, well-balanced minds of the profession regard drugs merely as adjuvants in the cure or prevention of consumption; they do not cast them aside as of no use at all, but regard them as valuable aids, in so far as they may relieve some special condition, or act as tonics to the system at large, but here their utility ceases, and these master-minds never for one moment seriously entertain the idea that any drug can

ever be found possessed of the power to prevent or cure consumption unless the causes which produce the disease are removed.

Every effect must be the result of a pre existing cause ; consumption is an effect ; what is the cause ?

Whether it be a germ, a bacillus, or not, we care not ; whether it starts in the lungs or the stomach, we care not ; because we know that anything that lowers the vital standard predisposes to the disease, and that everything that elevates the vital standard tends to prevent it.

For heaven's sake, let us have a few moments of sanity in our discussion of this question, and let us bring "common sense" into the discussion. Let us reflect upon a few undoubted propositions,—

(1) Pulmonary consumption is practically unknown among savage and barbarous and aboriginal people.

(2) Pulmonary consumption is unknown among the lower animals in their native lairs.

(3) Pulmonary consumption is never heard of in the steers of Texas.

(1) Pulmonary consumption is most prevalent in crowded localities.

(2) Pulmonary consumption is notably prevalent and fatal among monkeys when placed in confinement.

(3) Pulmonary consumption is very generally found in cows living in barns, in contact with humanity ; it is extremely prevalent in cows that are "civilized," so to speak.

Consumption is a disease of so-called civilized life, and it is not found among those who live the wild, original life of nature ; here it is, in a nut-shell ; reason out, to its ultimate conclusion, what this means, and you have the whole secret of the prevention and cure of consumption. When Dr. Dio Lewis's wife was threatened with consumption (her family disease), did he fill her up with drugs ? Not a bit of it. He put her to "sawing wood," and made her go out doors in all kinds of weather ; but then he was a crank ; oh, yes ; all who favor "common sense" are cranks, in the estimation of Carlyle's fools, but, all the same, Mrs. Lewis got well, and is, we believe, alive and well to-day, at between 70 and 80 years of age.

The editor of this journal has cured many cases of consumption, and prevented many others that were imminent, but not by

drugs. Many others have done and are doing the same thing, but those who thus preach are “cranks”; well, so be it; all we “cranks” can do is to preach “*common sense*,” and if “Carlyle’s fools” will not *practise* it, so much the worse for the fools.

If consumption threatens,—that is to say, if there is a family predisposition thereto,—it will not develop in the individual in whom a normal stomach digests good, wholesome food; who resorts to intelligent lung exercise, and who allows himself an abundance of oxygen.

The tripod of prevention may be formulated as,—

- (1) Good digestion.
- (2) Pulmonary exercise.
- (3) OXYGEN.

And we put oxygen in great big letters because without it the other two requisites are impossible and inoperative.

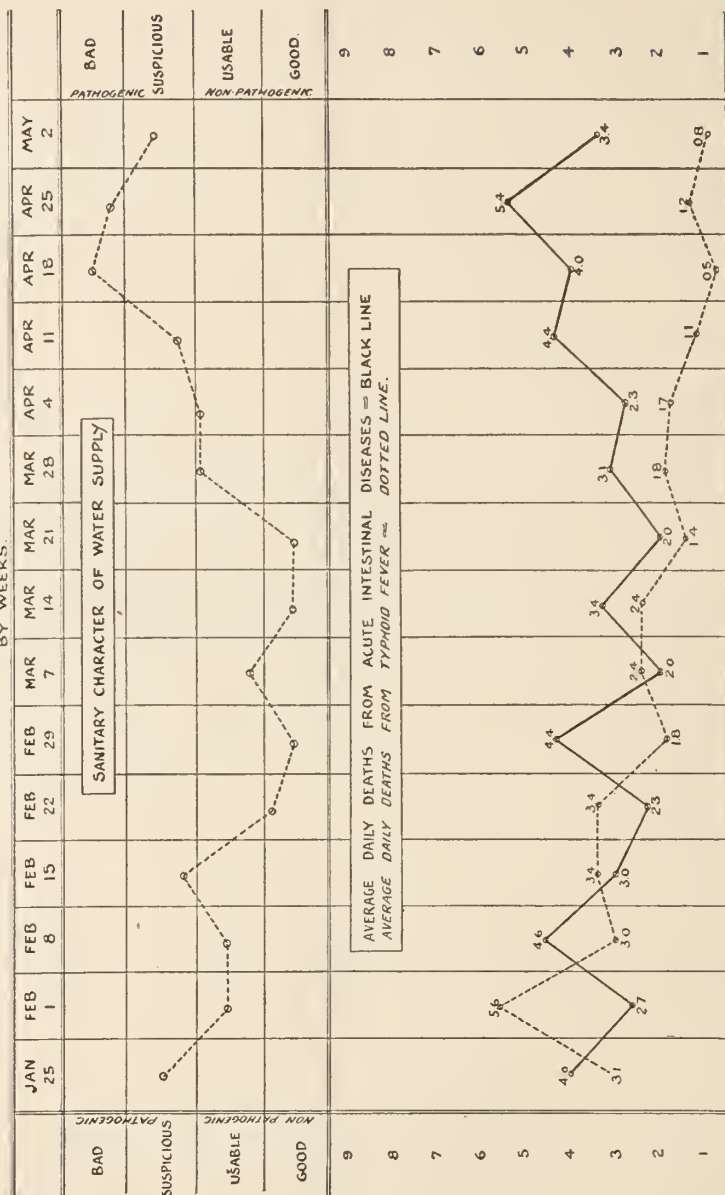
The tripod of prevention is also the tripod of cure in all curable cases. But are drugs of no avail? As specifics, none whatever; as adjuvants, they possess the greatest utility.

If a person threatened with, or in the early stages of, consumption continues to live a life favorable to the development, or progress, of the disease, no drug can hold it in check, or eradicate it, but should he so modify his life in accord with “*common sense*,” that nature can have a chance, then drugs will prove most valuable aids to the curative and preventive powers and efforts of nature. Now, we have the whole question explicitly stated in these few words, yet “Carlyle’s fool” will still continue chasing the *ignis fatuus* of a *specific* cure, millions dying in the effort to accomplish the obviously impossible; to live in opposition to natural laws, and by the aid of some drug to cheat nature of her revenge. Nature is not one of “Carlyle’s fools,” and he who makes the mistake of thinking that he can hoodwink her will pay a fearful penalty for his folly.

Impure Water and Disease.

IT is not often that one can have presented so graphically the direct relationship between impure water and disease, as is shown in the accompanying diagram issued by the Department of Health of the city of Chicago. It is well worthy of careful study, constituting, as it does, a most convincing argument in favor of pure water.

CHARACTER OF WATER SUPPLY AND DEATHS FROM ACUTE INTESTINAL DISEASES.
BY WEEKS.





Warming Bedclothes.

An ingenious use of electricity is to warm the bedclothes. This is done by heating a system of wires inside a double quilt. The current can be regulated at will, and the temperature maintained at the required degree.

A Hindoo Philosopher.

A Hindoo who had murdered his wife and mother-in-law at Bombay was executed at the local jail. The Hindoo, before he suffered the extreme penalty of the law, discoursed on the nothingness of the world. The present age, he said, was full of falsehood and fraud, and it was only the liars, scandal-mongers, and deceitful who could command honors, riches, and abundance.

Eating Muskrat.

Club men are discussing with much gusto a dish which was one of the features of the usual daily luncheon at the Merchants' Club, on Thursday, says the *Baltimore Sun*. This dish was a tempting creation out of muskrats, prepared by that epicurean genius, Major N. S. Hill.

Some who could not overcome the prevailing prejudice against the name and peculiar smell of the live animal did not partake of the dish. Those who did, however, pronounce it a relish as delicate as any bird and equally as nutritious.

It was pointed out that the muskrat was the cleanest of animals in its habits. Its custom of washing its food and its frequent baths were cited in support of this statement. In the old days of plantation life the flesh of this animal was regarded as a great treat.

Dressed for cooking, the muskrat weighs from one to two and a half pounds. It may be stewed, fricasseed, or broiled. In preparing the animal, it is essential to remove the skin and musk-bag carefully. When this is done no evidence of its characteristic odor is to be found in the meat.

Gastronomical Arithmetic.

Teacher.—“Suppose, Johnnie, your mother cut a pound of meat into eight parts, what will each part be?”

Johnnie Chaffle.—“One-eighth of a pound.”

“Correct. Now, suppose she cuts each eighth in two, what will each part be then?”

“One-sixteenth of a pound.”

“Just so. Now, suppose she cuts each sixteenth in six pieces, what will each piece be?”

“Hash!”—*Texas Sifter*.

Flavored Stamps.

The Chicago *Tribune* suggests that some day the following conversation will often occur in our post-offices :

“What flavor, please?”

The young woman, who was buying postage-stamps, paused.

“What flavors have you to-day?” she asked.

The clerk ran his nose rapidly over the stock.

“Ah, we have strawberry, pineapple, sassafras, lemon, and crushed fruits of all kinds, as well as the latest mixed flavors.”

“Well, let me have 200 sarsaparilla one-cents and fifty twos in crushed raspberry.”

The young woman stepped aside and was succeeded by a man who took five quinine two and three licorice fives.

Prefers Beer to Wine.

A curious example of a man with a champagne income who rarely drinks anything but beer is the Emperor Franz Joseph, of Austria.

Even at the grandest state banquets at the court of Vienna he is served with his favorite beverage, Pilsner beer. He rarely drinks wine of any kind, although his cellars are the most celebrated in the world. But the emperor is not a heavy beer-drinker, either.

He is accounted by European students of social habits as one of the three monarchs who have made intemperance unfashionable. The others are Victoria and King Humbert. The latter only drinks a little wine diluted with water.

Physicians' Beards.

The Nord *Medical* replies to an article on this subject by the Boston *Medical Journal*, which concludes that medical men should not wear beards for bacteriologic reasons, acquiescing and adding that they should all be bald also.

To make House-Plants Grow.

To make house-plants grow, Professor Boosof says, Saturate the earth around them every day with the coffee left over at breakfast. Five or six drops of ammonia to every pint of water once a week will make them flourish. To make bulbous flowers blossom, fill a flower-pot half full of quicklime and the remainder with good earth, plant bulbs, and keep the earth damp. The heat of the lime, tempered by passing through the earth, will cause the bulb to send forth shoots to blossom. The colors of red and violet flowers are rendered extremely brilliant by covering the earth in their pots with about one-half inch of pulverized charcoal. Charcoal does not affect yellow flowers at all in this way. —*Popular Science News*.

A Good Salt Bath.

It does not cost much to get as good a salt bath as any one needs if there is a bath-tub within reach. As the encyclopædia will show salt is simply salt under any name, differing so little except in the matter of impurities, that whether one uses sea salt, rock salt, or common salt does not matter in the bath. Sea salt makes a longer journey than the others to reach us, and having the advantage of travel, is advanced to a much higher price per quart or pound, and dispensed over the druggist's counter in the compact and sightly packages. But go to the nearest grocery store and buy two or three quarts of "ice-cream salt," put a handful or two into a small salt-bag that has been washed until the name has faded from it (this to get rid of all coloring matter), tie the bag tightly and drop it into the bath-tub half full of water, either hot or cold. Shake it about in the water and it will soon dissolve, and your bath is ready for you. It will equal any "sea-side hot bath pavilion" in good effects, and you will save dollars on a course of them.

Electrical Alarm for Infants.

According to a French journal, an inventor has devised an electrical arrangement, which consists of a microphone placed near the head of a baby in its cradle, and connected to a sort of relay which operates an electric bell placed near to where the nurse is asleep; a cry from the child will, therefore, cause the bell to ring.—*Popular Science News*.

Infant Feeding.

Dr. Cheney (*Occident Medical Times*) believes that mothers usually feed their babies too often. At first the interval should be about one and a half hours; at six weeks give food every two hours; three months, at every three hours, and at six months, give every four hours, and keep that interval from then on. As to the manner of feeding, he says we all have seen failures in infant feeding, not due to quality, quantity, or irregularity, but due to bolting the food. We cannot do so ourselves without suffering thereby. The baby is usually given the bottle and literally "swills" its contents down, a whole bottleful, which is the source usually of the indigestion. The nurse or mother should handle the bottle and allow the baby fifteen minutes to drink what may be in it.

Disinfection of Room-Dust.

A series of reports on this subject by Dr. Miquel has been appearing in the *Annales de Micrographie*. Some of the commonly used disinfectants, such as phenol, thymol, sulphurous acid, and naphthalene, are shown to be either ineffectual or very expensive. Carbolic acid, for instance, is about as active as alcohol or brandy, and less so than vinegar. The vapors of acetic acid are very active, but too expensive for ordinary use. Essential oils appear to be about as active as phenol. Concentrated aldehyde, in weak solutions only (1 to 2 per cent.) should be used, exposed in shallow dishes and allowed to disengage their vapor slowly for several days. Another good plan is to burn methyl alcohol slowly in lamps surrounded with platinum gauze. Very penetrating vapors of aldehyde are disengaged, which do not alter metals or the colors of textile fabrics, while efficiently disinfecting the dust of a room.

Pocketful of Spoons.

A physician recently appeared at a meeting of his medical association in this condition. He stated that he had accumulated them at the houses of his patients and measured their capacity, which he found different in every case, ranging from two-thirds to three times the standard capacity. One teaspoon held exactly five times as much as another. He had brought them to serve as a warning to his colleagues in ordering their medicines.—*Journal of the American Medical Association.*

House-Ferns.

To be successful with house-ferns the following directions should be observed: Watch the surface of the earth in the pot and only water your fern when it appears dry. Sword-ferns require comparatively little water, while umbrella-ferns, for instance, require a great deal. Take any possible chill off the water by adding a trifle of hot water. Shower the ferns thoroughly once a week, and in warmer weather set them out doors during a warm, gentle rain. Be careful not to let draughts come upon the plants. Be sure the drainage to your pot is good and that each pot is large enough for its fern.

Dr. Johnson on Women.

Of marriage in the abstract, Johnson highly approved. "Every man," he said, "is a worse man in proportion as he is unfit for the married state." He even approved of a man contracting a second marriage, and considered it as a compliment to the first wife. He acknowledged, however, that he had once been on the point of asking Mrs. Johnson not to marry again. She might well have granted his request without any fear of being tempted to break her promise. Johnson ridiculed the idea of a man being unwilling to marry a pretty woman lest he should have cause for jealousy. "No, sir," he said; "I would prefer a pretty woman, unless there are objections to her. A pretty woman, if she has a mind to be wicked, can find a readier way than another, and that is all." He had, in fact, made a profound study of women from every point of view. And yet, as Mr. Craig observes, Johnson never took women quite seriously, and would not hear of their assuming an equality with men, either in mental or bodily pursuits.—*Athenæum.*

Abjuring Breakfast.

A number of feminine brain-workers have come to the conclusion that they can do better work by going without breakfast, eating only a slight luncheon and making six o'clock dinner practically the only meal of the day. Many of those who have tried it declare that they have entirely overcome the faintness that they felt at first, and that they are able to put their faculties to better use than ever before.

Boiling Water.

Delmonico once said, "Few persons know how to cook water," and he gave these directions: "The secret is putting good, fresh water into a neat kettle, already quite warm, and setting the water to boiling quickly and then taking it right off to use before it is spoiled. To let it steam and simmer and evaporate until all the good water is in the atmosphere and the lime and iron dregs only left in the kettle,—bah! that is what makes a great many people sick, and is worse than no water at all." It was Delmonico who, if he did not discover, at least made the hot-water cure popular, for it was a favorite prescription for which he charged his customers twenty-five cents and gave them properly-boiled water.

Sea Soup.

The discovery that the sea is a vast brew of microscopic creatures explains how fish can thrive in deep-sea waters where there are neither vegetable growths nor animal forms visible to the naked eye.

This puzzled students of fishes for a long time and they formed many curious theories. Great shoals of herring at certain times leave the coastwise waters and disappear in the apparently foodless waste of the sea, yet they return fat. Certain kinds of whales thrive under the same conditions.

This was a mystery until it was recently settled beyond reasonable doubt that both wales and herring are able to subsist on the microscopic organisms which swarm even in the waters of mid-ocean.

The sea is, in fact, a great nutritious soup, and the fishes are in it and like it.

Toast with Tea.

Toast is the newest and most intensely correct thing to serve with afternoon tea. The bread should be toasted to an even orange brown, crisp but mollified by butter and cut into squares and piled on a plate and covered with a bowl to match.

A Mixed Obituary.

The paper was late and the make-up was dumping matter in the forms at the rate of a column a minute. Result: The first part of an obituary had been dumped in the form and the next handful of type came off a galley describing a recent fire. It read like this in the newspaper: "The pall-bearers lowered the body into the grave and it was consigned to the roaring flames. There were very few, if any, regrets, for the old wreck had been an eyesore to the town for years. The loss was fully covered by insurance."—*Newspaperdom*.

Insomnia.

The London *Lancet* presents the following thoughts respecting insomnia:

"Insomnia is really a mere symptom, and will no more be treated *per se* by the intelligent practitioner than the eruption of an infectious fever or the diarrhœa of typhoid fever. The great duty of the medical man is to trace it to its causes and its associations, and to deal with these. If it follows influenza, it must be regarded, like all the other sequelæ of that protean disease, with some patience, but with much conviction that it will yield, sooner or later, to sound treatment. A very important point is to ascertain whether the insomnia is attended with pyrexia or otherwise, for of all means for producing restlessness, and marring the night's repose, an increase of two or three degrees in the temperature is among the most effective. Apart from general pyrexia, it is well to note all local peculiarities of heat, whether in the direction of excess or defect,—cold feet, a hot head, etc.,—and to deal with them accordingly. It is, of course, equally important to ascertain any error of function that can reasonably be associated with such a symptom. Such errors may frequently be found in the gastric or renal or hepatic functions, and their removal will quickly alter the whole complexion of the patient's life both by night and by day."

To Wash Windows.

Dust your windows carefully. Provide some small rags and a couple of large ones for drying. Put a gill of water and a tablespoonful of kerosene oil into a cup, wash with the small rags, wipe with one large one, and polish with the other.

The kerosene is also useful for cleaning mirrors, etc., in fact, all kinds of glass articles take on a new lustre and brilliancy when cleaned with this common plebeian coal oil. It leaves no odor, and would leave no suspicion of its use even on cut-glass table wear.

Deformities found in Hod-Carriers.

Golebiewsky has examined the spines of hod-carriers obliged to carry from eighty to ninety kilogrammes up four ladders, five to six times an hour, working nine hours a day, and has described the deformity which is found in all cases. A hod was carried on the left shoulder, and a dorsal scoliosis with the convexity to the left was developed, with an elevation of the left shoulder, compensatory torticollis, neck and lumbar scoliosis, and a muscular hypertrophy on the left neck and back. After giving up the work, this hypertrophy diminished. Hypertrophy of the heart was found, and in many instances flat-foot.

Fruit.

Ripe fruit of all kinds almost, including nuts, are attractive, delicious, appetizing, and healthful. Over-ripe and immature fruit is neither appetizing nor healthful. Since so much is said about appendicitis, a great many persons who are very fond of fruit, and who need it, discard its use through fear of being attacked with this affection. The disease is not any more common than it used to be. It is only more generally recognized, and it is the explanation of many sudden and fatal attacks of peritonitis, or inflammation of the bowels,—the causes of which were unknown.

Most persons who discard fruit because of their fear of appendicitis use the pulpy fruits, such as apples, pears, plums, and peaches freely and confidently, while they deny themselves the many-seeded fruits, such as raspberries, blackberries, strawberries,

grapes, etc. These small and many-seeded fruits can always be eaten with impunity if taken with other food, especially with bread, potatoes, and such glutinous and starchy foods as afford a covering for the seeds. It is surprising what sharp and rough and indigestible substances will safely pass through the whole intestinal track without doing any injury at all, if plenty of potatoes, bread, or oatmeal is eaten at the same time. The best time to eat any fruit is at the table and with other food.

All fruits with skins on should be washed and peeled before eating,—especially fruits exposed on the streets and where dust and flies can have access to them. Few are aware of the danger of food contamination by flies. They are great scavengers, and are not at all choicé as to what they eat, nor where they step. They pass at one bound from an infectious carcass, a foul ulcer, or a mass of diseased sputum or reeking filth to the apple, pear, or peach, and with dirty feet and dirty proboscis run over it and contaminate it. Hence all such fruit should be first washed and dried and then pared, if possible. Even food to be cooked ought, for cleanliness' sake, to be washed if cooked with the skin on.

Fruit is rich in acids that are grateful to the stomach, stimulate the salivary secretion, are grateful to the taste, and aid digestion. It is foolish for persons to deny themselves the pleasure of eating fruit through fear of infection by microbes or appendicitis because perhaps one in a million persons happens to get a seed in the "appendix." Fruits are among God's good creatures, grown for the delight, enjoyment, and physical benefit of rich and poor, prince and peasant.—*Iowa Health Bulletin*.

Results of Municipal Sanitation.

Rev. Dr. Malcolm M. G. Dana, now filling Dr. Storrs's pulpit in Brooklyn for the summer, in a recent address, thus puts the economic value of municipal sanitation :

"When the health department was organized in New York, in 1866, the death-rate was 35.04 per 1000. In 1868 it had fallen to 29.31. In twenty years more the rate was further reduced to 26.20. In 1893 the rate was 23.52, and in 1894 the lowest record was reached since 1814,—viz., 21.05 per 1000 inhabitants. The decrease in the death-rate for twenty-five years of 5.89 per 1000 represents a saving of over 3500 lives annually, and of over

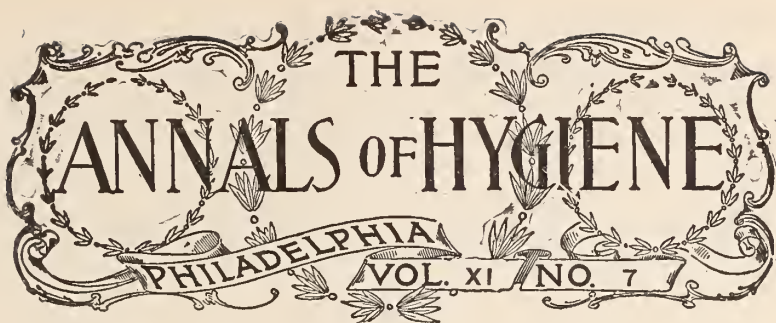
80,000 lives during the quarter of a century. Adopting the English valuation of each life at \$770, and the social capital saved will amount to \$61,600,000. Adding further to this the reduced number of sick cases, usually reckoned at twenty-eight to each death, and you have some approximation to the large amount of suffering prevented by sanitation. To this also should be added the pecuniary benefit resulting to the laboring class by the increased exemption from expenses incident to sickness and death. We are not about to think of the economic results of this saving of life through municipal effort. It stands in proof of the gains accruing to the most exposed of the population by enforced sanitary improvements by the municipal authorities.

"England reckons that the lives saved through the lowered death-rate from what it was between 1866-75 to what it became in the period reaching from 1880-89, amounting to 856,804; this represents on the English basis of the *per capita* valuation of each life a social capital of \$650,000,000 saved. In ten years England has more than regained the sum spent in fifteen years for sanitary improvements, though the average annual expenditure has been \$42,000,000.

"Moreover, statistics show that sanitary measures affect the death-rate for persons between the ages of 1 and 21. The economical gain is, therefore, significant, since the 28 per cent. of those who might have died during that age period, which is one mostly non-productive, were tided over. Had these thus saved died at the age of 20 or thereabouts the community would have gained no recompense for the expense incident to maintaining them during these non-productive years.

"In France it is estimated that if vaccination and revaccination were made compulsory and if towns were obliged to supply pure water to their inhabitants, the saving of life would amount to between 25,000 and 30,000 persons annually.

"While in Germany only 110 cases of small-pox are reported annually as fatal, in France the number is put at 14,000. Ideal social conditions are reached slowly or by patient efforts, but we are steadily nearing a higher morale, and the city of the future in its improved condition, its wholesome life, its ampler opportunities for enjoyment and culture, will be the certain evolution of economic and regenerating forces now at work."—*New York Herald*.



COMMUNICATIONS.

Hygiene to Observe During Cholera Epidemics or when in Cholera Countries.

BY THOMAS C. CRAIG,

Passed Assistant Surgeon, United States Navy,

Navy-Yard, New York.

THIS becomes quite an important subject when we reflect that the dread disease cholera may at any time make its appearance in our country. It is to the rigid carrying out of certain definite and fixed rules that the spread of cholera can be limited and the disease stamped out.

(1) There are certain natural agents which are deadly to the growth of the cholera spirillum; and supplemental to these are the empirical means, which man employs, to destroy this spirillum.

These two means combined are the most potent agencies with which to combat the cause of cholera. The natural agents are sunlight and desiccation; the empirical agents are heat, chemicals, and cleanliness. The action of sunlight is in itself quite potent in destroying the cholera germ. It is not the direct heat contained in the rays of the sunlight, but there seems to be some inherent chemical action in the rays of light by which the growth of the cholera spirillum is inhibited, and if long enough continued, to destroy the life of the germ. It might be asked, then, why is it that the intense sunlight, which we generally find in tropical countries, does not completely destroy all the spirilla of this disease?

In answer it may be suggested that the spirilla are not all subjected to sunlight; that sunlight does not penetrate very far into water, and that shade is abundant in the tropics. Recent experiments by a German investigator have shown that the influence of sunlight on bacteria extends in murky water to about twenty inches below the surface. Water is almost the sole vehicle of contagion in cholera. With poor sewerage and drainage, it is easy to imagine the contamination of the drinking-supply. Deep, dark wells or reservoirs form excellent incubators for this germ. Sunlight never penetrates these; and, moreover, they are seldom or never cleaned out and purified. Persons are, either through ignorance or carelessness, unmindful of consequences; hence the discharges from cholera cases are not destroyed, but receive the same disposal that other waste does, and the result is contaminated water-supply, contaminated vegetables, and contaminated clothing, and contaminated bedclothing.

The other natural agent, which is deadly to the growth of the cholera spirillum, is desiccation. This agent is more potent for the destruction of the cholera spirillum than the first one mentioned,—viz., sunlight.

The cholera germ cannot live without moisture. In this particular it widely differs from most other of our pathogenic organisms. It is well known that the vitality of many pathogenic organisms remains almost indefinitely in the dried condition. In witness of this, I instance the anthrax, tubercle bacillus, diphtheria bacillus, tetanus bacillus, etc. Not so with the cholera spirillum.

Desiccation means death to it. It requires moisture in order to live. A drying for twenty-four or forty-eight hours destroys it. This, to my mind, explains why certain of our vegetables, as, for example, the potato, beet, turnip, etc., grown in fields, where cholera discharges may have been used as a fertilizer, are often innocent of carrying the infection. When these vegetables are dug up, they are exposed to the sunlight and sun heat, and their outside quickly dries. It is this desiccation which kills the cholera spirillum. If all of our contaminated reservoirs and wells, contaminated vegetables, contaminated clothing, and contaminated bedclothes could be thoroughly dried for a certain length of time, they would become free from the contagium, and the further spread of the disease checked. When these two natural agencies are combined, we get a very high and potent factor for the destruc-

tion of the cholera spirillum. These agencies are always at hand, are perfectly harmless, and by their use much could be done to prevent the spread of cholera. Now as to the empirical means. Chief of these is heat.

The thermal death-point of the cholera spirillum is far below that of boiling water, hence, how easy it is to destroy this spirillum by simply boiling our drinking water. One reason why more of the Chinese and Japanese do not annually die of cholera is the fact that they never drink any unboiled water. They do not do this for any hygienic reasons, but for the fact that their custom is to drink tea; and as it is boiled in its preparation, it becomes sterilized, or, in other words, all the germs are killed, among these being the cholera germ, should the water contain any. It is for this reason many of the Orientals escape this disease.

The next means that empiricism has taught us to use is acids and chemicals. Long before the cause of cholera was known, it was found that acid lemonade was useful, during cholera epidemics, to guard against the disease. In his work on "Therapeutics," Dr. H. C. Wood, under the article on acidum sulphuricum, says, "It has been employed with advantage in cholera, and a remarkable series of observations by Dr. R. G. Curtain at least furnish good reason for further testing its powers as a prophylactic against this disease.

"The facts recorded by Dr. Curtain are as follows: A very severe epidemic of the disease ceased in the insane department of the Philadelphia Almshouse within twelve hours after the lunatics were all put upon the free use of sulphuric acid lemonade; the only new case after this being in a man who refused to use the prophylactic.

"Two days after the use of the sulphuric acid was stopped, two new cases occurred, and the epidemic was again arrested by the use of the acid. In the surgical wards of the hospital department, the acid was used from the beginning of the epidemic; and these wards, although in no way isolated, were the only parts of the institution unvisited by the disease." Could any evidence be more strong than that just quoted? Clinical observation had thus demonstrated, many years before the discovery of the cholera spirillum, that sulphuric acid lemonade was effectual in arresting a threatened epidemic of cholera. The knowledge of this fact is of prime importance in our laboratory work, for we find that the

cholera spirillum is very particular about its food. This germ will not grow in an acid culture medium. The culture medium must be neutral or slightly alkaline in its reaction, or its effects will be fatal to the growth of this germ. Hence we see that acids are almost prophylactics against this germ; and for this reason all of our drinks in a cholera country should be acid. Most of our fruits are acid, and hence many of them are excellent adjuvants to use in order to guard against cholera. Chief among these are lemons and oranges. Thus we see that either the mineral or vegetable acids are useful to use, in order to prevent infection by the cholera spirillum.

Chemicals, such as carbolic acid, mercuric chloride, calx chlorinata, liquor sodii chlorinata, milk of lime, ferri sulphas, etc., also destroy the cholera spirillum, and thus become useful agents in the prevention of cholera, and in promoting cleanliness.

(2) The next thing to be done is to confine the disease within certain limits, so as to be more easily dealt with, and to prevent its spread. An effective quarantine is the only way to do this. A slipshod, go as you please, or an accommodating quarantine is more dangerous than none at all. Perfect control of patients, and all infected material, areas of infection, vehicles, means of travel, merchandise, water-supply, etc., is the first requisite for the quarantine or health officer. If this can be secured, an outbreak of cholera is quickly mastered, and the disease easily eradicated.

Clothing, bedding, carpets, furniture, and, in fact, anything which has become soiled by the discharges from cholera cases, should be taken charge of by a competent person, and he should prevent any one from coming in contact with them, until they are freed from all source of contagion. The idle, the curiosity-seekers, and untried and untrained persons should be prevented from coming in contact with, or mingling among, persons infected with cholera. By these means, the quarantine or health officer can the more effectually confine an outbreak of cholera to a small area, and thus the more certainly stamp it out.

(3) Disinfection. By this is meant, the means taken to secure the destruction of the living organism, which would propagate the disease, which it is the object to eradicate. In the case of cholera this should be comparatively easy, since the spirillum is not tenacious of life. Employing sunlight, desiccation, acids,

and chemicals accomplish this object. All contaminated clothes, bedclothes, syringes, basins, etc., and, in fact, all articles which have been soiled by the discharges from cholera patients, should be subjected to the action of a strong solution of carbolic acid (one to twenty), or should be exposed to dry heat at 100° C. for an hour. If this is not possible, then the articles should be boiled in water for an hour or two; in either case making sure that the heat penetrates to all parts of the mass alike.

Under other circumstances soaking them in a 1 : 500 solution of mercuric chloride would answer just as well.

Soiled bedding should be burned in a furnace, and soiled furniture, soiled floors, soiled bedsteads, and soiled walls should be washed with a 1 : 500 solution of mercuric chloride, and afterwards exposed to the direct rays of the sun and heat.

The patient himself should be well bathed in a strong solution of acetic or citric acids, and afterwards put on clean linen, and then be removed to a clean apartment. The disinfection of the discharges of cholera patients is probably the most important matter in this connection. Before they are finally disposed of, they should be subjected to the action of a strong solution of carbolic acid or mercuric chloride, these quantities should be twice the volume of the *fæces*, and should be thoroughly mixed and allowed to stand for an hour before being thrown away. Mixing strong sulphuric acid with the discharges is yet better to disinfect them. Even after this, care should be exercised not to throw them where, by perchance, they could drain into a water-supply.

(4) What personal precautions should be taken to guard against cholera? It is, perhaps, safe to say that no case of cholera has ever arisen without the cholera spirillum having gained entrance, in a living state, to the alimentary canal by the mouth.

It will be noticed that I have qualified my statement by saying, in a living state. Of course, no dead germ could do any harm, but the point I wish to bring out is this, it is usually necessary for the *living* germ to gain entrance to the alimentary canal by way of the mouth and stomach in order to give rise to a case of cholera. The interior of the stomach is always, normally, in an acid condition, and it is this fact which prevents many cases of cholera.

The cholera spirillum having been taken into the stomach

meets the gastric juice; and as we know acids are fatal to this germ, it is but a comparatively short time before all the spirilla of this disease are killed. They pass on into the alimentary canal, but they are harmless, because they have been killed by the gastric juice. A year or more ago, a celebrated professor in Germany, whose writings on hygiene we have all read, ridiculed the idea of the cholera spirillum being the cause of cholera. He even went so far, to prove his assertion, as to drink water impregnated with the cholera spirillum.

He did not contract the disease. Why? Because his gastric juice killed the spirilla before they reached his alimentary canal; and hence they were harmless. I would venture the assertion that, had he introduced that same infected water into his alimentary canal by way of the rectum, the result would have been far different, and that to-day he would have been either dead or a strong advocate in opposition to his own theory. Under certain conditions, the interior of the stomach becomes alkaline for a short time.

The regurgitation of the bile, or a catarrhal condition having been set up, or the imbibing of large quantities of water may so dilute or neutralize the gastric juice, as to render its action on this germ feeble or delayed. It is these cases, more particularly, which are the subjects of cholera. Hence it is that in cholera countries we should keep our digestive organs in prime condition, avoiding all those things which are liable to cause a change in the normal acid condition of the stomach. All drinking water should be boiled; all vegetables should be thoroughly cooked; all food, including meats, bread, and, in fact, everything that passes our lips, should first be heated, certainly to the boiling-point of water. Even our butter should be heated, and then allowed to cool. Ice should not be put into our drinking water, but the water should be put into clean bottles, and these placed in contact with the ice. The whole point is this,—*do not eat or drink anything which has not been recently subjected to at least the temperature of boiling water.*

An acid wine would certainly be safer to use than beer, but the safest drink of all, and the one less liable to do harm, is *pure water*. Persons who are working around where cholera patients are, or who are nursing them, or physicians who are attending them, should be particular to thoroughly disinfect their clothing and hands before mingling with healthy individuals.

(5) How can we avoid contracting cholera?

This will largely depend on following out the rules and directions given under the fourth heading of this article.

But granting that, for the average person, he cannot be sure about the purity of the water and other necessary food.

Under this head it will be best to allude to these things under two divisions,—viz., food and drink. All food should be thoroughly cooked; avoiding all green uncooked vegetables, such as lettuce, celery, onions, radishes, cucumbers, etc., and such fruits as strawberries, cherries, grapes, etc.; these being such as are put into the mouth whole, without the skins or outer coverings being removed. Along with these I would certainly place most of our commoner fruits, such as watermelon, cantaloupe, banana, peach, etc., especially if they were cut in sections by any one other than oneself.

Over-ripe or under-ripe fruits should be avoided, on account of the gastro-intestinal troubles likely to arise, and thus lead to an abnormal condition of either the stomach or intestinal canal, and thus predispose to the propagation of the cholera spirillum, by furnishing an alkaline culture field. As a routine practice, it is a good rule always to acidulate the drinking water, or, as more palatable, to use a lemonade. In case lemons or limes cannot be obtained, a substitute can be made of citric acid, and in case this latter cannot be procured, a few drops of sulphuric acid added to a tumblerful of water and sweetened, make a fairly good acid drink.

Where none of these acids can be procured, vinegar could be used, and in case this cannot be had, then drink *hot* tea or coffee. Avoid ice-cream, soda water, ginger ale, sarsaparilla drinks, beer, etc. Avoid fatigue and all enervating exercises, as these, by lowering our "vital resistance," may predispose to the development of the cholera spirillum, once it has gained access to the body.

In case of contamination of the water-supply, especially of a large city, where immense reservoirs are used, the only thing for an individual to do would be to thoroughly sterilize all the water he used, either for cooking, drinking, or bathing.

The question of the purification of a large volume of water has, indeed, many difficulties to overcome. The source of the infection can be corrected, but the question of emptying a large reservoir brings up the query, What will the people do for water,

while you are disinfecting the reservoir? This, of course, will be impracticable, unless a town has the good fortune to have a double supply, or two reservoirs, so that while one supply is being purified, the other will furnish the water, and it, in turn, could then do duty while the other one is being cleaned and purified. The contamination of the water-supply of a community should be sedulously avoided, for no greater calamity could possibly befall any one, than to have their drinking water-supply contaminated with the cholera spirillum.

The Therapeutic Value of Exercise.

BY RANDOLPH FARRIS, M.D.,

Director of Physical Education in the University of Pennsylvania,
Philadelphia.



HERAPEUTICS is the most essential branch of medicine, because it treats of the application of remedies and the curative treatment of diseases. There is not a single physician who will deny that exercise exerts a tremendous power over the body; and its therapeutic value in a great many diseases is equal to if not greater than that of drugs. When scientifically prescribed,—and by scientifically I mean from a medicinal stand-point,—it is capable of producing results which are of inestimable value to the patient. On the other hand, if prescribed empirically, the results may be such that a shattered and maimed condition of the physique will remain ever after, and in extreme cases death may follow. The advantage the physician possesses, in prescribing exercise as a remedial agent for his patient instead of a drug, is that he is using a natural means which is physiologic in its character to overcome the diatheses of the body and cure the diseases of it; while if he were to employ drugs he would be using an unnatural force and one usually employed to change pathologic conditions to those of a physiologic or natural state. The potency of exercise is measured not simply by prescribing it, but by prescribing it intelligently,—that is, by using it when needed and adding to it any auxiliary means, such as drugs, pure air, proper and nutritious food, suitable clothing, bathing, water, either mineral or

pure in its nature, ventilation, and sunlight. When prescribing exercise the doctor should consider heredity, idiosyncrasies, age, sex, strength of constitution, previous diseases, and injuries; also habits and temperament, and should add to these everything which pertains to bodily hygiene. Few persons know the symptoms of exercise when it is doing good, and still fewer recognize the symptoms which are the prodromes to overwork and exhaustion, whereafter disease frequently follows. The symptoms of exercise, when correctly applied, will be increase of appetite, increase in bodily weight (training and persons with a great amount of adipose tissue excepted), bright color of skin, the heart-beats are regular and full, there is an increase in pulmonary capacity, the normal sounds will be clear and distinct, the muscles contract more readily and become harder, will-power is strengthened if the exercise be a voluntary one, the nerves respond to stimuli more quickly, the different parts of the body assimilate food more readily, accomplishing bodily construction with little or no waste of energy, sleep is of the soundest and most refreshing kind, and the cornea will present a glassy, bright appearance. If the exercise prescribed be doing harm, the symptoms will be just the opposite of those when good is resulting, and we find the appetite impaired or lost, bodily weight is decreased, the skin blanched or pale, the cardiac impulse is diminished in force and may be irregular, hypertrophy with dilatation and even valvular disease may follow, the pulmonary air-cells become very much distended, if the exercise be one that has called upon the lungs to any great extent, a slight vesicular murmur can be heard upon auscultation, and if the exercise has been one calling for repeated strain one will hear a slight bronchial râle, the lungs may become emphysematous which may lead to phthisis, the muscles do not contract quickly nor to their fullest extent, they become flabby and have a doughy feel, a disinclination to work comes on, which diminishes will-power, the disposition will become irritable, the nerves respond to stimuli less quickly, food is badly assimilated throughout the body, sleep is supplanted by restlessness and wakefulness, and the cornea has a dull appearance.

Many physicians prescribe exercise, never dreaming that they are already adding coals to the fire of the disease for which they prescribed it. For example, one physician will tell a patient who is suffering from brain overwork to take riding lessons, for-

getting that mental operations are required to learn to sit properly and guide the animal at first; another will advise bicycle-riding which also requires mental effort. From this we learn that no voluntary movement should be prescribed for a person suffering with mental trouble, and, in fact, one may be compelled from the strength of constitution of the patient to begin his or her treatment by first insisting upon a rest in bed.

There is nothing which will add to the usefulness of a life and be so great a protection from disease as exercise properly indulged in. By what mechanism does exercise manifest its value as a therapeutic agent? By bringing into play the organs of movement,—namely, the brain, spinal cord, the nerves and muscles, which stimulate every part of the human frame by sending new blood to the different parts of the body and carrying old away. Let us analyze the therapeutic value of exercise in reference to brain overwork brought about by study, over-anxiety, and the many moral responsibilities one constantly encounters. When the intellectual organs are taxed for a long period the brain is kept active, nervous changes are manifesting themselves with lightning-like rapidity, in the brain-cells, waste products, especially urates and uric acid, are produced, combustion increases the cerebral temperature by sending more blood to the part, the strain upon the nervous mass gradually but surely becomes too great and nervous exhaustions of all sorts follow, and, alas, when it is too late, insanity overtakes the student.

Prescribe an involuntary exercise and what will be the result? The blood will be drawn from the brain to the part employed because wherever there is movement there we shall find the blood flowing in greater quantities; and in this way we deplete the overcharged blood-vessels in the cerebral mass, and in so doing have decreased the temperature of the brain; further, we have changed the place of the production of waste materials, and in this way have rid the brain of being exposed to their toxic effects, moreover the life and death, or production and destruction, of the brain-cells have been diminished, on account of a smaller amount of blood going to the brain and no cerebral energy is expended because the exercise is automatic and calls for no stimulation of the will. The additional point gained, as to the therapeutic value of an involuntary exercise, is that we have eliminated the action of the brain and have thus conserved just so much nervous energy, because the spinal cord takes the

place of the brain and the blood goes to this part of the nervous system in greater quantities instead of going to the brain.

Take another use of exercise and apply it to the brain where we find a need for it by stimulating the motor centres through the will in cases of infantile palsies, so that we may get the child to endeavor to use its limbs and frequently we overcome this disease, in a great measure, by using exercise in conjunction with different kinds of apparatus. If the surgeon would not give up in despair, in reference to these cases, but endeavor by one means or another to get the child to use its will-power I am sure more numerous and more satisfactory would be the results. The difficulty often lies in the fact that the child is not shown how to make the best use of the amount of movement she or he has. More attention should be paid to developing the child's will-power to work in harmony with the organs of movement and especially the muscles, instead of allowing it to have its own way and rebel against doing anything which will cause it to exert all the energy it has to move the affected parts; by so doing I am sure the child would learn to use the affected part with a great deal of advantage.

Nervous maladies are found everywhere, and the evil results are too well known by the physician to need any discussion. Could the myriads of men and women who suffer with nervous diseases only know the therapeutic value of exercise, they would exercise enough to bring their shattered bodies back to a state of good health, and would not drag through their daily work and care eagerly waiting for bedtime to arrive. Some will say I have exercised and it has done me no good. Alas! it is too true; but why? Because no medicinal examination has been sought, no advice from a physician has been asked for, no laws of bodily hygiene have been followed, nothing but spasmodic work has been taken, and in nine cases out of ten the exercise has been taken too violently, too soon after eating, and under the guidance of an empiricist, or, still worse, under no guidance at all.

The therapeutic value of exercise also holds a high place in the public hygiene of our land. Constantly great changes are being made in the study of medicine, changes which are for the better and which are of priceless value to our nation, everywhere sound judgment is beginning to assert itself, and the question of exercise is now recognized as holding a most important therapeutic value throughout our land. The leading educators have

been convinced of the value of exercise when therapeutically applied, and have given it its proper place in the curriculum in the institutions with which they are connected.

Dr. S. Weir Mitchell, in his excellent little work,¹ shows conclusively how greatly exercise influences bodily change, and says: "Above all, educational wants are limited in kind and degree, and the physical man, woman, and child are what the growing state most needs. This is because nature must have a good foundation to start with, or man's mental, moral, spiritual, physical, and social being will be as naught. If you give nature but half a chance and apply exercise judiciously to her needs, she will with little trouble and without detriment so adjust her springs of action that a most healthful physique will follow. On the other hand, if you apply exercise wrongly to nature, her laws will remain the same, and, instead of being able to change her laws, one will find that the laws change the person who tries to take exercise by burning the candle at both ends, and trouble will positively ensue which will leave the body weakened forever."

Exercise modifies every tissue in our bodies, and the result of the modification will be for good or evil according to the judiciousness or injudiciousness with which we apply it. It has long been known by physiologists that function makes the structure of every organ and tissue we possess, which is simply saying that the body adjusts itself, or the different parts which control it, by applying movements to its different parts. The integrity of an organ or tissue depends upon the persistence of function, and it is through this persistence that we see muscles kept strong and healthy, the internal organs undergoing changes, joints modified and becoming easily moved, ever changing in structure, and the brain strengthening, enlarging, and modifying its convolutions. If muscular tissue be allowed to remain in a state of repose too long, we find its fibres weakened because they become clogged up with fat and other materials, the muscle will atrophy, and this influence will be felt by adjoining muscles. Besides this, we find the joints are affected and their movements are retarded, because they are absolutely dependent upon muscular action, and in extreme cases where there is a want of action the bones become ankylosed,—in other words, they are ossified, and an immovable articulation is the result. Is not the therapeutic value of exercise beyond measure in such cases when we know

¹ Wear and Tear, or Hints for the Overworked, p. 9.

that a joint may regain its function and the mobility of it be re established by using it either actively or passively? Surely no one will deny this value.

Further, let us see what exercise does for the heart and lungs. One must understand what the heart is and what the lungs are before being able to realize what a powerful effect exercise has upon them. Suffice it to say that the heart is a muscle and the lungs are the organs of respiration, composed chiefly of elastic tissue, and may be compared to a pair of bellows. Exercise enlarges the muscular fibres of the heart, makes them more elastic, they become firmer and stronger, and it is owing to this change that the blood is driven more energetically through the blood-vessels to the different parts of our body. A strong heart has an especial influence over our lungs, because it sends the blood with greater force to the pulmonary capillaries, and relieves us more quickly of breathlessness by modifying the passive pulmonary congestion, which is a concomitant of certain exercises. The lungs are benefited by exercise by having their air-cells brought into action, causing them to expand and thus increase in size and strength.

Further, the functional changes which occur during exercise, when scientifically applied, must be regulated by the nervous system, which is the agent that governs every organic function in our whole body. Should there be any disturbance in the nervous system, we immediately find the various organs suffering as to their function,—*e.g.*, the slightest injuries to the nerves, spinal cord, or brain will produce contractions, convulsions, atrophies, and paralyses of muscles; the different glands will be affected, and the heart and lungs will also suffer. It may be inferred that the whole nervous system may be strengthened by exercise, just as muscles are; by this I mean the number of cells in the brain and spinal cord may be enlarged by exercise, and the nerve-fibres themselves may also be enlarged in just the same way that muscular fibres are. What the limit of increase may be is not known, but it is reasonable to believe that these structures are enlarged, because we know that persons increase as to their will-power, and this is undoubtedly due to the nervous vibration taking place in the cerebral cells, produced by different kinds of stimuli.

Moreover, Dr. Luys, in his work on "The Brain," has proved that, after a limb had lost its function, certain parts of

the gray matter underwent atrophy, which was due to defective action of the motor cells; hence, if such an action can cause a want of development in these cells, it is but fair to conclude that exercise can increase the size and development of these cells, and since the brain is directly connected with the spinal cord and the spinal cord with the nerves, it is fair to infer that the same development would take place in these tissues. It is a well-established fact that the convolutions of the brain are developed by men who use their arms and legs to a great extent. We also know in idiots the convolutions are very poorly developed, and in some instances they are nearly smooth; while, on the other hand, the brains of men who in life were on an intellectual plane much above the average of their fellow-men, show convolutions of a most emphatic character. These conclusions point decidedly to the fact that will-power may be strengthened by exercise, because the person who is capable of undergoing systematic exercise puts himself or herself through a discipline which constantly requires volition to come into play, and the very habituation to work produces greater energy of will-power, which is productive of a moral as well as a physical force in the nature of the person exercising; and not infrequently the moral force thus produced changes a man from an immoral to a moral being, because it is through his exercise that he has developed the qualities of precision, perseverance, courage, decision, forethought, self-control, patience, endurance, unselfishness, and many other qualities. Again, we not infrequently find persons whose very soul engages in the exercise they indulge in, and this appeals to their spiritual nature. Hence it is but fair to conclude that exercise also has a spiritual influence upon mankind. So often do we find persons averse to taking exercise, because they are thoroughly conversant with all of its abuses, while they are totally ignorant of its uses. They have heard of one person dying from consumption brought about by exercise, another from heart-disease from the same cause, a third from ruptures of various sorts, a fourth from too long a walk, and so on; and they are right in their belief,—that is, that the trouble was started by exercise, but in how many cases did the person seek the advice of a physician at the outset? Not one, I venture to say.

The therapeutic value of exercise exerts a great influence upon cell-life, and we find thousands upon thousands of cells of

all kinds produced and destroyed by exercise. Exercise not only increases cell-production, as I have already alluded to, but it also gives greater vitality to every cell in our bodies when scientifically applied. Protoplasm is cleansed and recleansed, produced and reproduced, by exercise, by being purified while in the blood, and hence a better tissue results, no matter whether it be nervous, muscular, elastic, or osseous; and especially so when everything pertaining to bodily hygiene is added. Moreover, more bodily energy is acquired, and it is also of a more lasting nature when exercise has been used properly, instead of being abused as it is in many cases. The metabolic changes which are brought about by exercise are the very conditions which sustain the equilibrium throughout our bodies. The selective power of the cell is made more manifest according to the integrity of the mass of protoplasm supplying it. Anything that interferes with, injures, or alters the blood-current will change the normal relations between the flow of blood and the tissues supplied, and here we find metabolic changes concerned, because they depend upon blood-supply and tissue change. If we use exercise judiciously we may by it bring a perverted tissue back to the normal and re-establish a function which seemed to all intents and purposes lost, and if not lost at least greatly impaired. Metabolic changes are affected in many ways,—*e.g.*, by a general atonic condition of the vasomotor system, atheroma of blood-vessels, a paretic state of the trophic nerves, a feeble condition of the heart and by a lack of exercise itself. If we apply exercise to the foregoing condition we may so tone up the system that the existing trouble will disappear, or at least be so greatly benefited that no evil result will follow, which would have followed had exercise been omitted.

It has long been known that anæmia and leucocythæmia are characterized by changes in the blood, which are traceable to a disordered metabolism, and these diseases may be greatly benefited by exercise, especially if nutritious food, attention to hygiene, and some of the preparations of iron be added. Gout, rheumatism, Bright's disease, consumption, heart-diseases of all kinds, all kinds of deformities due to muscular action, such as lordosis, scoliosis, talipes calcaneus, talipes equino-valgus, talipes varus, talipes equinus, talipes valgus, hollow chests, round shoulders, drooping shoulders, a condition where one carries the head forward and downward, feeble-minded children, hepa-

tic and gastro-intestinal troubles may be treated by exercise. The value of exercise in gout and rheumatism manifests itself by driving the blood to every part of the body, and in this way all the tissues which are contaminated with an excess of urates and uric acid are bathed with new blood which carries these waste materials to the kidneys for elimination from the body. In Bright's disease the kidneys themselves may receive such a thorough washing by the blood that the patient may receive no end of benefit; but great care should be taken in prescribing exercise for one suffering with this malady, least too great an action should be called for by the kidneys in the elimination of waste products.

Exercise for consumptives may be either active or passive. When it is active,—that is, if the patient indulges in it himself,—he should always do so under the direction of a physician so that the disease may be benefited instead of aggravated. If passive,—that is, by the treatment of massage,—it should be borne in mind that too much rubbing and too long a *séance* will often be more productive of harm than of good. The course a person suffering with weak lungs should pursue, if engaging in active exercise, should consist of breathing exercises which are productive of long inhalations and exhalations, movements of all kinds should be indulged in, but these should always keep pace with the amount of strength possessed by the patient, exercise should be taken in the open air as much as possible, and bathing should be taken carefully and judiciously. The only rule to go by in bathing is to take the bath one has been accustomed to all their life.

Weak hearts and heart-diseases are benefited by exercise just as other muscular tissue; but greater care is necessary in the case of the heart because its anatomy is much more complex and its nervous mechanism much more delicate and intricate than that governing other muscles in general; and it is not subject to the same conditions of rest and action that the other muscles are.

In the application of exercise to deformities, the actions of the muscles causing the deformities should be known, and also those muscles which act antagonistically, because it will be found that the latter are the ones whose action, when properly understood and used, will correct the existing trouble. Further, the physician when using any group or groups of muscles to overcome a deformity, no matter whether it be a spinal curvature, a hollow chest, or one of the many forms of deformed feet, should

always bear in mind that the development of muscular tissue and stamina is slow and will often take months and even years to effect a cure, and hence he should never despair if, after an apparently fair trial, he has failed. The deformity will be corrected if the physician only has the determination to stick to his work.

Feeble-minded children are greatly benefited by exercise, because it not only increases the vital activity of all the tissues in their bodies by increasing the blood-supply of every part, but also because exercise may be prescribed which is extremely simple at first and which may be made more difficult each day until the mind of the child is receiving the severest kind of discipline, in fact, a discipline equal to if not greater than that received by any study it may pursue in school; in such a case the exercise should always be a voluntary one. In a case where a child is suffering from brain overwork which leads to nervous debility and exhaustion, if an absolute rest is not essential, the exercise should always be an involuntary one or one that does not require mental operations, and even then the physician should have the symptoms of fatigue, overwork, and exhaustion at his finger-ends so that he may not be censured for doing the child more harm than good, and in order that he may recognize them the moment they appear so as to discontinue the prescribed course the child is taking. When the above precautions are not observed, we frequently find a pseudo-typhoid fever resulting, and in some cases a fever presents itself which resembles intermittent; if, however, the exercise be stopped these will disappear.

When exercise is prescribed for liver and digestive troubles one should endeavor to ascertain a most accurate account of the constitutional effect they are producing upon the patient and should immediately employ any drug in his possession to conjoin with exercise, and after the case is well under way the drug should be discontinued, but the patient watched very carefully; in this way much valuable time will be gained in curing the case. In gastro-intestinal troubles we find the appetite failing because the walls of these organs are suffering from paresis, the muscular coats lose their irritability, in consequence of which the functions suffer and hence the organs grow weaker. Exercise will overcome this when correctly prescribed.

Obesity is a condition brought about by a defective dissimilation of fat, and if exercise be correctly used, adding to it the proper kind of diet, it can be easily remedied; in this way the

patient builds up muscular tissue and improves his or her condition by getting rid of the superfluous adipose tissue. Exercise is of extreme importance in regulating the nutrition in our body and is indispensable to the maintenance of health. It also tends to bring every condition of our bodies to a state of equilibrium whereby health is obtained and maintained.

Intellectual Work and Longevity.

BY JAMES J. WALSH, A.M., M.D.,
Philadelphia.



THE impression prevails generally that a life devoted to intellectual work is usually not a long one. The assumption seems to be that the drain upon vital nerve force, of years of continuous intellectual effort, exhausts nature's store of energy before its appointed time. When scientific men, for instance, are taken off between their 50th and 60th year, the explanation at once suggests itself that it was devotion to scientific work that brought on their early demise.

"Not work but worry that kills," some one has well said, in contradiction to this impression, and the necrological list for the last year or two of men eminent in scientific medical circles forms an interesting commentary on the question at issue.

Louis Florentin Calmeil, M.D., the distinguished French specialist in psychological medicine, died March 11, 1895, at the ripe age of 97. For seventy-five years he has been doing work in medicine and the allied sciences that has kept his name prominently before his contemporaries at least in France.

Baron Félix Hippolyte Larrey, the distinguished French military surgeon, after whom is named the amputation of election at the shoulder, died October 7, 1895, at the age of 87. He had gone through the exhausting labors of hospital service in the Crimea and the Franco-Prussian war, had served a campaign in Algiers, and had lived through the troublous times of 1848 and 1871 in France, and yet was hearty to the last.

Alphonse Guérin, another distinguished French surgeon, was 78 when he died last year.

The worry and sense of responsibility, almost necessarily incidental to their work, does not seem to shorten the lives of surgeons, for three distinguished German surgeons, one English, and one Scandinavian all died last year at advanced ages.

Wilhelm Meyer, the discoverer of adenoid vegetations in the pharynx, died at Copenhagen in June, at the age of 81.

Franz von Reid, at Jena, also died in June, aged 85. Many an American student of surgery abroad of some ten or fifteen years ago, remembers cordially the kindly old professor.

Adolphe von Bardeleben, the professor of surgery at the University of Berlin, died September 24, aged 76.

Karl Thiersch, to whom the world owes so much for his improvements in the technique of skin-grafting, died April 28, in Leipsic, where he had been so long professor of surgery, at the age of 73.

Nor do men who devote themselves continuously to scientific investigation along certain lines in medicine seem to pay for fame in shortness of life.

Karl Ludwig, the distinguished professor of physiology at Leipsic since 1865, and for ten years before that in Vienna, and whose whole life has been a series of the most patient, painstaking, and laborious investigations (we may add also most successful), died April 26, aged 79.

Professor Felix Hoppe Seyler, who died August 12, at the age of 70, had been, for many years, the most distinguished investigator in physiological chemistry alive, and many a student has gone to the University of Strasburg because of the fame of his name.

When Huxley died, June 29, he was past 70, and his had been a life typically full of patient, arduous investigation, solid, rational, scientific teaching, and brilliant, if not always orthodox, and original writing.

Pasteur was 73, and worked on till the end. From the time in the early fifties, when drunk with the wine of the joy of discovery, he staggered up against a fellow-student in the Rue d'Ulm with the words, "*Je viens de faire une grande découverte*" (I have just made a great discovery); he was coming from his laboratory where he had just demonstrated the right and left polarizing properties of the two varieties of tartaric acid crystals, up to the day almost of his death, few lives have been filled with more persistent or more arduous work. What a glorious catalogue it

makes, studies in wine, vinegar, parasites of silkworms, beer, chicken cholera, anthrax rabies. Any one of them seemingly a life work, yet each taken up in succession, the problems in it solved, and then on to the next.

He lived longer than most men, beyond the span assigned by the Psalmist, and would probably have eaten his heart out in morbid impatience if he had been compelled to spend time in idle leisure.

Our own Dr. Oliver Wendell Holmes is a type of an extremely busy man, accomplishing the supposed impossible, succeeding at literature and in the most exacting of the professions, and yet living to be 85.

We would be tempted to conclude after a list like that of the deaths in one year that the ideal state of life for those who desired longevity was that of a successful surgeon or scientific investigator. The conclusion would have much more truth in it than the prevailing impression as to the brevity of their lives. It is more than probable that, given a certain amount of vital energy, its conservation will be best studied by orderly, regular, and constant employment at some work that is at once absorbing in itself and satisfactory in its results. Work of itself, when not excessive, is a tonic and stimulant rather than a depressant of vital energy. Intellectual work, instead of being incompatible with the full cycle of allotted life to the organism, is rather an additional factor in securing the completeness of life by rounding out, developing, and satisfying the higher faculties.

The Microbe of Luxury.

BY LAURA J. WILSON,

St. Paris, Ohio.



OUR "around the world" temperance organizer, Miss Jessie Ackerman, tells us of many interesting sights, and makes American daughters feel that "we are blessed among women."

She has been in the palace of the king, at the table of the lowly, and through it all lives to record upon her fingertips the contented, happy woman. In two countries, Siam and Alaska, woman's fate is most cruel; it is but little wonder that

the heathen mothers often yield to the impulse and strangle the baby girls, that they may escape life with its hard burdens.

When we read and the mind dwells upon these Oriental countries, we feel greatly oppressed. But half the art of living is in the art of forgetting, so we shut it out and forget.

Goethe, the son of warm-hearted, home-loving Germany, dwelt much upon the cultivating of contentment.

Contentment to find joy in a quiet moonlight scene, the blowing of the night wind, or see great beauty in the mass of fleecy clouds piled up in the west for the resting of the sun.

All nature tries in her simple, humble way to alleviate the trials and sadness of man.

The strong heart, the cultured heart, needs not the hand of art and luxury to bring the thrill of happiness and contentment. They want nature around and overhead, and in the places they call home must be faces who plainly show the fact that the body is more than raiment and the life is more than meat.

We talk of high tariff as good for the people, and bemoan the fact that we are forced to see the law removed, believing this removal to be the cause of much national discontent.

Let high tariff rule or free trade, the worm still lives, for much of this surging unrest comes from the disease of luxury.

Humanity thinks more of the raiment than of the body, and life was given that they might feast.

The banker's wife rides out in her victoria, coachman, footman, and prancing bays. She may bear a striking resemblance to the patricians of the land, or there may be the scent of other days.

In her gorgeous silks and cape of many colors she shines forth to be admired, and become the pattern of the poor, tired shop-girl, who has already a mistaken idea of happiness. The banker's wife not only appeared vulgar, but sowed the seed of luxury and discontent in hearts that earn their daily bread by the sweat of the brow, and are thus tempted to spend it in cheap finery.

While I would not restrict the wardrobe of a woman to gowns of a matter-of-fact cut, I would have the rich bear in mind that there is a time for all things. A woman has no more right to wear rich laces and flowers upon the street of a city than has her husband to appear at his store or office in an evening suit and lavenders.

Let the street suit be of a becoming color and neat fit, reserving the dainty tea-gown and rich satins for home and evening wear.

Not a more irritating sight ever comes to my eyes than a round-shouldered creature dressed in the latest fashion,—fashion that requires a sacrifice four times a year, while beauty stands quivering in the background.

Bring out the curves and shine up the skin of the body. For with pride of body comes refined and simple ideas of dressing. Also new health that will help destroy this microbe disease of luxury and the restless fever discontent.

Let us as American women make the next “around the world” missionary have good cause to say, In America I find so many women who think their homes are built exactly right, who think their husbands are kinder than their sweethearts, who think that to a great extent they make their own joys, and other people send the sorrow. A strong antidote for this sorrow thrown into woman’s heart is to cultivate contentment with one’s surroundings, after everything has been done to better them. A study of the laws of thrift and health. It is most pleasant if we awaken in the night, a rain-storm beats against the earth, that a neat roll of bank bills may be called ours. On the other hand, we almost grow to hate the gaudy hat that in the store had such an air of elegance. Be we rich or poor, let us remember, though we live in the valley of sorrow, that if we are worthy of better days they will come. But bear in mind that in every gentle wind that fans the brow are found millions of microbes. This one microbe is peculiar to the brain of woman, causing a shrivelling of the pocket-book, acidity of temper, and a crop of envy.

Taken all together, it is a disease that is to be avoided, for it will surely kill the flower,—the little flower contentment.

The First Chocolate Drinker.

Coffee was introduced into Venezuela from Arabia by the Franciscan monks, but cocoa was indigenous to the soil and was used in large quantities by the Indians for food at the time of the discovery. It was not liked by the Spaniards at first, but was introduced in France by the Franciscans, who were always enterprising, and the French cooks at once adopted it into great favor. Cardinal Richelieu is said to be the first chocolate drinker of any fame, and to have set the fashion of using it.—*Chicago Record.*

Contagion in School-Books.

BY R. W. STRONG,

Belmond, Iowa.



EVERYBODY should be protected from diseases so far as possible, and those who are endeavoring to accomplish this purpose should be given great credit therefor.

The Legislature of Iowa, at its last session, adopted a law which, if followed, will undoubtedly prove disastrous to many school children in the State. It provides that school-boards may buy school-books at wholesale and furnish them free of cost to the scholars, said books to be left at the school-house and used from generation to generation until worn out.

State superintendent Sabin favors the measure and says, "It is believed that if districts will take action in accordance with the spirit of this provision, the percentage of attendance at school may be materially increased, and the usefulness of our schools to all the children greatly enhanced."

I believe it is a dangerous measure. In most schools there are children who have various diseases, and it does not seem just or proper that these should handle books and then pass them to healthy children.

To the tax-payers the law will cheapen the price of books, but economy should not prevail in such a case, where the lives of so many children are placed in jeopardy.

[The warning uttered by the author of this paper should be heeded; the books that have been used by a child who suffers from any contagious disease should be destroyed by fire; this is a hygienic dogma about which there should be no difference of opinion.—*Editor ANNALS OF HYGIENE.*]

Cholera in Egypt.

There were one thousand and thirty-four cases of cholera reported in Cairo since last October, but of the entire number there was not a single one among Europeans.—*Medical Record.*

The Value of Respiratory Gymnastics in Maintaining the Integrity of the Lungs, and as an Aid in the Treatment of Diseases of these Organs.¹

BY EDWARD O. OTIS, M.D.,

Boston,

Medical Director of the Young Men's Christian Union Gymnasium ; Visiting Physician to the Free Home for Consumptives.

IN the differentiation of medical work and the minute attention which is accorded to each organ of the body, the function of respiration seems, in a measure at least, to have escaped the careful attention granted the other vital processes. One consults his physician and is interrogated by him to see, for example, if his kidneys are acting properly or his heart is in order ; if his digestion is well performed and his diet correct ; or his hepatic secretion normal ; but frequently neither thinks to ask if the breathing is adequately performed,—a function which is of such vital importance, not only for the integrity of the pulmonary tissue itself, but for the well-being and health of the whole body. Upon the efficient performance of this act, we know, depends largely the condition of the circulation, assimilation, and excretion, as well as the process of combustion, the greater or less completeness of which depending also upon the greater or less perfection of the respiratory act. And further, so far as the lung tissue itself is concerned, it responds very delicately to the manner in which it is used or disused. Full and free respiration of pure air strengthens the pulmonary tissue and nourishes it with well-oxygenated blood ; its vitality is increased in direct proportion to its work, exactly as is the case in muscular activity ; the resisting force of the lung tissue is also increased. On the contrary, inadequate and partial respiration, such as so many persons of sedentary habits and in-door occupations are accustomed to, throws into disuse more or less of the lung tissue and reduces to a minimum the respiratory function. In consequence of this the nutrition becomes defective and the tissue weakened, becoming an inviting soil to disease and the

¹ Read before the Boston Society for Medical Improvement, February 10, 1896 ; from the Boston Medical and Surgical Journal.

bacillus. The deprivation of the pulmonary exercise furnished by the articulation of words is said to be the cause of the frequency of pulmonary tuberculosis among deaf mutes, and I can readily believe it. Among the inmates of the Consumptives Home almost all, with the exception of teamsters, were of in-door occupations, which meant, as a rule, insufficient respiration.

“There is no apparatus,” says Lagrange, “where we can verify in a more striking manner the law that ‘action makes the organ’ than in the respiratory; no organ is so rapidly modified as the lung in accommodating itself to the more active working which is demanded of it.” We all know that it is the apices of the lungs which offer the least resistance to the invasion of the tubercle bacillus, because they are the portions of the organ which remain habitually inactive in the inadequate breathing of sedentary life. Time and again have I heard the click or râle at the apices of the lungs on full inspiration in examining candidates for the gymnasium, which indicated that this portion of the organ was ordinarily inactive, and never have I detected it when the person has been in the habit of taking deep inspirations.

This question of proper respiration becomes one of exceeding and especial importance to the person of sedentary habits and occupation, which is the condition perforce of a large proportion of our city population. The little round of the city dweller’s life is one of limited movement and slight bodily activity. A short walk frequently comprises all the exercise he takes, and even this is often “more honored in the breach than in the observance.” The modern elevator, even, is often a curse in disguise, for walking upstairs, which Sir Andrew Clark was so fond of prescribing for his patients, is, I believe, an excellent form of exercise as well for the respiration as the heart. Indeed, when one reflects upon it he will be struck with the similarity of the life and its results of the sedentary individual, who takes little or no exercise and eats and perhaps drinks too much, and the stall-fed ox or the *pâté de foie* goose; in both cases over-feeding and inactivity are the causes which lead to fat deposition and infiltration of the organs with a continual surplus of the products of incomplete combustion. Now the lungs suffer from this abnormal life quite as much as the liver and other organs; the lung tissue is only partially and inadequately brought into play, and, consequently, poorly nourished. The supplementary respiratory muscles are rarely or never called upon to do their important part in the act

of respiration, and, in consequence, they atrophy and become incapable of action, like any other disused muscle of the body. As time goes on the portion of the lungs which takes part in respiration becomes more and more reduced, and a large number of pulmonary vesicles become inactive. Whenever such a person is called upon to undergo any unusual exertion, like ascending several flights of stairs, climbing a mountain or riding a bicycle, he finds his breathing embarrassed, he suffers from a "thirst for air," for the air-cells in use cannot furnish the necessary oxygen. On the contrary, if he is in the habit of taking such exercise as calls into play the reserved pulmonary vesicles, then these cells are always ready to perform their function whenever any unusual exertion is demanded. And further, even in a state of repose these so-called reserved cells take part in respiration; one's "ordinary" lung capacity is large, as I have frequently proved by the spirometer; the respiration is slower and fuller, and finally, this fuller respiration, introducing a larger amount of oxygen, produces a better hæmatosis and increases the general activity of the organic functions.

Now good breathing came naturally to man in his original state, for he was intended to be an active animal—to run and climb, to bend and twist his body, to stretch and extend his arms, and, in brief, use all his muscles; and as long as he followed nature in this respect his lungs had full play and the respiratory muscles were maintained in a state of efficiency. So-called civilization, or at least city civilization, has so modified all this that one's life has resolved itself into a mental hunt for subsistence rather than an active bodily one. The natural life with its bodily activity has become an artificial one of more or less bodily immobility, and what nature unconsciously did to promote and maintain proper respiration must now be done by conscious effort and artificial methods, like gymnastic and athletic exercises and training. True, a man could live in tolerable health in this inactive condition, only half filling his lungs, if he were always sure of remaining in it, but he never knows when an emergency may arise which will require the respiration which well-trained lungs can only give, be it an unwonted exertion, an acute disease, or exposure to a tubercle bacillus when the nutrition happens to be poor or the system depressed. And further, the sense of physical well-being is much greater when the respiratory tide is full and strong, as the experience of all of us will testify after some exer-

cise which makes large demands upon the "wind," as bicycling, for instance. As the late lamented Baron Posse has so well said, "To breathe well means to live well, to live longer, and to live better."

Having then determined the necessity of full, free respiration, what are the means to obtain it? First, there are the indirect ones, in the form of general exercise, gymnastics, athletics, and all forms of muscular exertion, provided it is energetic enough. Of course, the result is obtained by a greater demand for oxygen and a greater production of carbonic acid, which requires more energetic respiratory activity. Now these are applicable not only to those in ordinary health but as well to those who suffer from some pulmonary lesion, but at the same time are capable of a certain amount of muscular effort,—bronchitics, the emphysematous in the intervals of the acute attacks, convalescents from pneumonia and pleurisy, and the tuberculous when not febrile.

The following case is an illustration of the beneficial effect of breathing exercises in pulmonary disease. Miss C., the head nurse of the Consumptives' Home, contracted while in service a pleuritic effusion of the right chest, presumably tubercular. The fluid filled two-thirds or more of the cavity. Aspiration was performed several times; and as soon as the patient could sit up, breathing exercises were instituted. The absorption of the remaining fluid and the expansion of the lung were prompt, and the process, I believe, was materially hastened by the persistent use of the respiratory exercises.

The general exercises which are good for increasing the respiratory power are very numerous, as we know. Walking, however, I do not consider a very valuable one. "A person who only works and walks," as a recent writer on bicycle exercise says, "hardly ever fills his lungs." There is swimming, tennis, rowing, bicycling, skating, golf, running, jumping, hand-ball, mountain climbing, going upstairs, the *cure de terrains* of Oertel, dancing, singing, reading aloud, free-hand classwork in the gymnasium, and rope-jumping. I was recently told by one conversant with the training of boxers that rope-jumping was a common form of exercise with them for increasing the "wind." All exercises which bring the legs into violent action are especially good for the respiration, on account of the number and size of the muscles employed. Secondly, there are the direct or local respiratory exercises, those especially devised for training and de-

veloping the respiratory muscles and lungs. Now these direct lung exercises are also applicable not only to the well but to those who, from pulmonary lesion or general bodily weakness, are unable to undergo the more active general exercises, for they increase the efficiency of respiration, without increasing the *need* of respiration, creating the "thirst for air." Of course, all exercise is interdicted to those suffering from acute inflammation, the febrile state or serious hæmorrhage.

These especial pulmonary exercises are simple and yet efficacious: Standing erect in a well-ventilated room, or wherever there is pure air, with the hands on the hips, and taking long, deep inspirations and slow expirations, beginning at the bottom of the chest and filling up, so to speak. This alone, done several times a day, will often materially increase the lung capacity, as I have frequently verified. "Numerous observations," says Lagrange, "prove that it is enough, voluntarily to take a certain number of deep breaths every day, to produce in a short time an increase in the circumference of the chest, which may amount to two or three centimetres."

In these breathing exercises the rhythm can be varied according to the following schedule:

- (1) Slow and long inspiration and expiration.
 - (2) Inspiration and expiration long and quick.
 - (3) Slow and long inspiration, and long and quick expiration.
 - (4) Long and quick inspiration, and slow and long expiration.
 - (5) Short inspiration and long expiration.
 - (6) Long inspiration and short expiration.
 - (7) Short inspiration and expiration.
 - (8) Inspiration by two or three stages or jerks, and expiration long.
 - (9) Inspiration long and expiration by stages or jerks.
 - (10) Inspiration and expiration by stages or jerks.
- In all these exercises one should breathe through the nose only.

Then there are the various arm movements with their modifications, in connection with the deep breathing, slowly raising the arms to a horizontal position and then over the head until the hands meet, slowly and deeply inspiring while performing the movements, and expiring while lowering the arms, thus the supplementary respiratory muscles of the chest and shoulders are brought into action.

Raising the arms and then carrying them back and down, describing a movement of circumduction. Standing erect and

straightening up and finally rising upon one's toes, deeply inspiring during this movement. Extending the arms in a horizontal position and carrying one of the legs back so as to offer a large base of support to the body. Lying on the back horizontally upon the floor or a table and raising the arms backward and over the head while inspiring; if lying upon a narrow table, the arms can describe a circle about the head. The exercises with wands or bar-bells, which demand rather more exertion, perhaps, than the free-hand movements. In the Swedish system of gymnastics there are almost an innumerable variety of respiratory exercises, most of which, however, are but modifications and combinations of a few simple movements, and most of them can be performed without apparatus. Then there are the gymnastic devices and apparatus for increasing the lung capacity and developing the respiratory muscles; the so-called "chest-developers" and "lung-expanders"; the "chest-weights" and "quarter-circle"; the high parallel bars and travelling rings; and the heaving movements of the Swedish gymnastics, which are usually exercises of hanging and climbing by means of rings, bars, ladders, and poles.

Renzi describes the following apparatus for prompting deep respiration, which he makes use of with beneficial results in his clinics as well as in his private practice. To two hooks in the wall are attached cords, and to these a cross-bar much like a flying trapeze; the height of the bar is adjusted to the height of the patient. This cross-bar is seized by the patient with outstretched arms, who leans forward, forming a curve with his body; the two points of support being the hands on the bar and the toes on the floor. In this position of the body the patient is forced to take deep inspirations whereby the thorax is much expanded. The standing position is then resumed, and the thoracic muscles relaxed, when a deep inspiration is practised. These two movements are performed alternately from twelve to twenty times a minute.

If the patient is too sick or too feeble to take any of these various exercises, either free-hand or with apparatus, he can be given passive respiratory exercise, much after the manner of the Sylvester method for producing artificial respiration. Sitting upon a bench or stool and leaning upon the chest of an attendant standing behind him, the arms are raised above the head synchronously with inspiration. With the lowering of the arms and pressure against the sides forced expiration is produced. This can also be practised in the recumbent position.

Although the movements of inspiration are the most important in the respiratory act, yet expiratory exercises have their place. These are generally passive, like the act itself. One which Lagrange especially notes is the following: The subject lies flat upon the abdomen on the floor or a bench and raises his head and shoulders, thus contracting the extensor muscles of the vertebral column. In this attitude the abdominal muscles are stretched and prevented from contracting and pulling down the chest walls. In this position forced expiration is practised. In emphysema especially, expiratory movements are useful; these can be simply direct pressure upon the chest walls, with various manipulations of the thoracic muscles, or a peculiar Swedish movement also noted by Lagrange; it has for its object the mobilization of the semi-ankylosed chest wall, which is a condition existing in chronic emphysema. The patient is seated astride a narrow bench or his legs are held and two attendants seizing him by the shoulders rotate the trunk upon its axis, alternately from right to left and left to right, the object being to mobilize the vertebro-costal articulations and to restore movement to the chest walls.

Besides all these methods of respiratory exercise there are certain machines or apparatus devised by Zander and Nycander. Some excite deep inspiration by passive movements for raising the ribs, others render the expiration more complete by compressing the ribs through the use of girths or straps which compress the thoracic walls at the moment when the lungs empty themselves of air. The latter machines are said to render great service in pulmonary emphysema, where the expiration is always laborious and incomplete.

Finally, we have massage of the respiratory muscles, which the Swedish physicians always prescribe at the same time that active and passive gymnastic movements are given. As will be seen, the number of exercises available to produce better respiration are very numerous and varied, but the underlying principle is simple,—namely, to bring into more vigorous play the muscles which expand the thorax, and at the same time excite deep, full, free breathing; to bring the vital force of the lungs to its maximum. It must be borne in mind that all exercises of the thoracic muscles for the purpose of producing an increase in that cavity must at the same time be coincident with deep breathing; the amplitude of the respiratory movements must be increased; the

lungs must push out from within as well as the thoracic muscles pull from without. Once having established a proper respiration by the use of some of the simple respiratory exercises and devoting a few minutes to it every day, the habit of full and deep breathing is formed even when one is in a state of repose. And further, one is fortifying himself against the possibility of disease of the lungs by thus maintaining the pulmonary tissue in an active, healthy, and well-nourished condition; and there is no portion of the apices which from insufficient use and poor nourishment is a menace to the individual by offering a fitting soil to a wandering bacillus. In convalescence from pneumonia and pleurisy with effusion, the importance of expanding and revivifying, as soon as possible, the lung, whose functional capacity has been diminished, and whose nutrition has been depressed, can hardly be over-estimated. As Lagrange truly says, "In all the inflammatory maladies of the lungs there persists a tendency to stasis and passive congestion, to correct and obviate which no means is more efficacious than very ample and deep inspiration."

When the border line has been passed and incipient phthisis has been developed, respiratory exercises are a most important and precious means for restoring the weakened lung tissue and increasing its resisting power. The beneficial effects of the high altitude treatment are largely due to the fact that one is compelled to breathe fully and deeply in order to obtain the requisite amount of oxygen.

In every well-arranged plan of treatment of pulmonary tuberculosis, where any exercise at all is allowable, pulmonary gymnastics, carefully arranged and adapted to the strength and condition of the individual, should, I believe, be embraced. In the famous sanitariums abroad, where such excellent results are obtained, they play an important part in the treatment. We may in the future obtain a serum product which will accomplish all that was hoped for from tuberculin; but one must not forget that large numbers of consumptives are now being cured and restored to usefulness by means of the persistent application of nature's remedies,—sunlight, abundant alimentation, continuous out-door life, hydrotherapy, and good breathing. The *vis medicatrix nature* may not always give brilliant and rapid results, but when intelligently employed, it is a method which rarely disappoints either the confiding physician or trusting patient.

Disposal of the Dead, with Special Reference to the Prevalent Practice of Embalming.¹

BY A. WALTER SUITER, M.D.,

Ex-President Medical Society State of New York ; Fellow of New York Academy of
Medicine, etc.,

Herkimer, N. Y.

FROM remotest antiquity to the present time topics relating to the disposal of dead bodies have been universally interesting. No subject has been more carefully considered from all points of view, and yet it is not inconsistent with facts to state that no material advancement as to methods of preservation or final disposition has been made over those which were practised more than twenty centuries ago. Indeed, there is a growing belief in the public mind that to return to the custom generally in vogue previous to the Christian era (cremation) would solve many perplexing problems with which sanitarians are not unfamiliar.

Anciently, in Egyptian countries, where the surrounding atmospheric conditions were favorable, the dead bodies of human beings were embalmed and the mummified remains indefinitely preserved. The Jewish nations entombed their dead in rock-bound receptacles called sepulchres. In Greece and Rome the practice of cremation obtained, while it appears that we probably owe to the ancient Chinese the origin of the common method of the present date,—viz., that of interment or earth-burial.

For ages this absorbing subject has been surrounded, modified, and in various ways influenced among people of all classes, conditions, and climes by vexatious questions relating for the most part to sentimental, religious, sanitary, and medico-legal considerations.

It will be the purpose of this paper, in the briefest manner consistent with intelligent description, to invite the attention of this body to some questions which have especial reference to the two last-named considerations.

According to early chronological records, no branch of art was cultivated in higher degree than that of the embalment of the Roman corpse. Affection and superstition, always the great-

¹ From the Journal of the American Medical Association.

est motive powers of the world, together with the prevalent fanciful ideas of death and subsequent everlasting life, all combined to give the greatest prominence to the extraordinary, elaborate, and costly methods which were employed in the remote periods of civilization for the preservation of dead bodies, in order that they might be kept uninterred. As to means and methods, they were chiefly evisceration and cleansing, salting and bituminizing, the insertion in the emptied three great cavities of antiseptic balms and spices, desiccation by favorable atmospheric surroundings and the subsequent bandaging with expensive muslin and linen fabrics, painting, gilding, and marking of the hermetically sealed cases provided for their final reception,—all of which consumed a period of time amounting to seventy or seventy-five days. The final result of this process of mummification was to render the body as inoffensive in a sanitary sense as a block of wood or stone, and specimens of the remains of ancient kings and noblemen have been discovered, and are on exhibition, who lived and flourished at various epochs from 4000 years before the time of Christ, when the opposition of the priests inhibited the custom and caused the complete decadence of the art and its consequent abandonment, until the discovery of the circulation of the blood suggested an easier, less costly, and quicker method for the accomplishment of the desired purpose.

The great anatomist and surgeon, William Hunter, in the latter part of the eighteenth century, practised the injection of essential oils through the principal arteries for the preservation of anatomic subjects, but it was not until about the year 1835 that antiseptic solutions were used in this manner for the purpose of embalming, when the custom was inaugurated, simultaneously, it is said, by Drs. Lauth, of Strasburg, Franchini, of Naples, and Gaunal, of France. Various substances were then used, as chloride and sulphate of alumina, arsenic, zinc, and mercury,—the preservative powers of which had been established. Since that time to the present date nearly every substance known to have properties in any degree antiseptic when applied to animal tissues has been used for the purpose, and it would be quixotic to attempt the enumeration of the various formulas which have been from time to time proposed. It is perfectly proper to state, however, that taking the customs and achievements of the people of ancient times in this regard for a standard, the modern practice of embalming has been stead-

ily retrograding in skill and usefulness by being placed, without legal control or restriction, almost entirely in the hands of the ordinary undertaker, who is ignorant in most instances of the principles involved. The practice of injecting the blood-vessels has undergone of late a degenerative change. As a consequence of the hasty and superficial manner in which this operation is now performed, circumstances are too frequently encountered which are a menace alike to the welfare of society in general and to public sanitation, and it is the special purpose of this paper to call attention thereto, with a view to securing the endorsement of this great and influential organization to the effort which has been and is being made in the State of New York to regulate the practice by legal enactment, to be followed, it is hoped, by every other State in the Union.

I presume there are very few men of experience present who will not join me in asserting that the method of embalming at present in use by the so-called funeral director is not worthy of the name. It may be briefly described as follows: theoretically, and practically, in some cases, one of the principal arterial branches of the body (usually the brachial near the elbow bifurcation) is exposed and laid open with questionable skill, and a variable quantity of one of the innumerable fluids (which almost invariably contain in composition one or more or all of the preparations of mercury, arsenic, zinc, and carbolic acid) is pumped by means of a syringe into the artery, supposedly in a direction that the blood naturally flows.

More often, and almost invariably in remote districts, this process is carelessly modified, so that the operation consists in simply pumping the liquids into the thoracic and abdominal cavities through a trocar, and also by means of rubber tubing into the rectum and *per oram* into the stomach. It is supposed that the result of this is to preserve the body in a sanitary and presentable condition for ceremonial purposes previous to burial. There is little doubt that if the proper injection of the blood-vessels is carefully done with the required anatomic skill, such a result could be achieved with satisfaction, but it is obvious that when done in the incomplete and unscientific manner just referred to, the preservative effect is almost, if not quite, *nil*, and if it were not for the ordinary precautions commonly practised by the friends of the deceased themselves, the corpse would in most instances become a public nuisance in high degree before the final disposition.

The growing tendency to this careless and superficial treatment on the part of the undertaker, without legal regulation to obviate it, is the doorway to an enormous and systematic deception,—a commercial fraud, in fact, as a comfortable fee is charged for the service. To illustrate, I will not attempt to burden my remarks by citing numerous examples, which might readily be done, but will simply mention one familiar case which is well in point, because it was an instance where inutility was abundantly demonstrated when every facility was offered and the conditions were unusually favorable. I refer to the notable case of the late General Grant, whose lamented death, although for a long time previous an anticipated event, was a national calamity. It would naturally be supposed that in such an instance extraordinary precautions would be taken to preserve the remains for the elaborate and extensively-planned ceremonies incident to the occasion, and presumably the body was embalmed, and, doubtless, with the best skill obtainable. A few days later, when the funeral train reached Albany on its way from Mount Macgregor to the final resting place at now famous Riverside Park, a countless multitude of interested and admiring people were shocked to observe that no semblance of the well-known features of the distinguished military chieftain was recognizable. Suggillations, together with many other evidences of rapidly-advancing decomposition, were apparent, in spite of the fact that diligent effort was made to conceal them. There can be no doubt that the public health was in great degree endangered by the unpleasant circumstances.

This is typically illustrative of frequent occurrences of the kind in common observation, and I am led thereby to feel justified in declaring that there is a strong argument apparent herein in favor of legislation of such a character as will lead, at least, to the modification, if not the prohibition, of the so-called embalming process, which in a great proportion of instances neither accomplishes the intended purpose to prevent putrefactive changes with their attendant odors and appearances, nor properly conforms to the common principles in public health administration.

The other phase of this subject, to which I desire to call attention, might with propriety be said to deal rather with *public morals* than with *public health*, but it seems that no apology is due for the reference, as those two titles so closely merge into each

other in practice as to suggest that the medico-legal aspect comes properly within the scope and purview of the fundamental principles of this organization.

A case which I here quote from one of my previous papers¹ will also serve as a type in illustration :

Mr. E. A. P., a medicine vender, aged about 75 years, a short time after marrying his third wife, died with somewhat obscure symptoms after an illness of seven days. Some time after his burial, suspicion was aroused on the part of his relatives that his death was not the result of natural causes, and an investigation was instituted. I was employed by the authorities to exhume the body and ascertain, if possible, the actual cause of death. The body was found to be partially decomposed. The viscera of both the thoracic and abdominal cavities were carefully removed and properly prepared for subsequent chemic analysis, with a view to the establishment of the presence of poisons.

The analysis demonstrated unmistakably the presence in the materials examined of arsenic, mercury, and zinc in large and lethal quantities. About this time I was informed in a casual manner that the body had been embalmed by the undertaker who had charge of the interment, and, upon inquiry, it was ascertained that such was the case. The body had been treated in the following manner : A so-called embalming fluid was injected into the principal artery of both arms, and openings were made into the thoracic and abdominal walls, through which a quantity of the same liquid was thrown into each of these great cavities. Inquiry was made of the manufacturers of the liquid as to its composition. They admitted that it contained in solution the chloride of zinc and bichloride of mercury, but denied the presence of arsenic in any form. A sample of the fluid was then procured and analyzed. The analysis revealed that it contained, beside other unimportant ingredients, the very salts and compounds found in the remains,—those of arsenic, mercury, and zinc,—the revelation of and testimony upon which, together with other suspicious facts, were to be relied upon by the prosecuting officers to constitute the *corpus delicti* in the action. It was therefore impossible to determine whether these poisons were introduced into the body before or after death, and, for obvious reasons, the case was dismissed from the courts in consequence,

¹ Transactions Medical Society of State of New York, 1888.

although after a subsequent careful re-examination of the suspected tissues by cutting them into fine pieces and repeatedly washing them in chemically pure water until all traces of the poison were lost in the washings, and the remaining substances after being dried and analyzed still showed the presence of the metals mentioned, thus indicating probable ante-mortem absorption, no chemist would dare to express a positive opinion that, beyond reasonable doubt, the case was one of ante-mortem or post-mortem poisoning.

This is a striking example of cases which have been occurring in great numbers in recent years and are at present increasing in frequency. I do not hesitate to venture the opinion that there is no chemist of any considerable medico-legal experience who has failed to meet with similar instances, and the subject is now receiving the careful attention of many lawyers, judges, physicians, prosecuting officers, and, to some extent, legislators, with a view to the enactment of such laws relating to the disposal of dead bodies as will insure proper protection in this respect and meet, at the same time, the requirements of sanitation, with due and proper regard for the demands of sentiment.

The menace to the welfare and safety of the public is apparent in the premises indicated in this case, and I feel sure that its various relations will be at once appreciated.

It seems that no one can fail to observe the opportunity offered herein, to a criminally disposed individual, to commit and subsequently cancel the crime of murder by poisoning,—it simply being necessary that he should make sure that the body of the victim is treated in the manner referred to. That this opportunity is frequently taken advantage of at the present time is a well known and indisputable fact among those of us who are concerned in such investigations, and I might consume the entire time of this session by reference to cases of such character which have come within my knowledge during several years past, and while the subject of relative legislation has been pending in my State.

Obscurity of symptoms leading to confusion as to diagnosis, lack of suspicion, together with the fact that the perpetrator is frequently able to control the extent and character of the medical attendance; the ease with which a careless and inefficient undertaker may be procured to make himself, unwittingly, a *particeps*

criminis, all combine to favor the accomplishment of a criminal purpose, especially if it is the result of intelligent design as is generally the case.

It is a remarkably suggestive fact in this connection that between the years 1858 and 1892 not a single case of murder by poisoning was tried in the courts of the great city of New York. Is it reasonable to suppose that no such murders were committed in that city for a period of about thirty-five years? The statistics of London and Paris showed an average of three such cases yearly during that time. It will be observed that in consequence of this pernicious practice of embalming it is just as difficult to establish the *innocence* as the *guilt* of persons who may be accused.

By the toleration of the law, or the want of specific legal direction, this practice of alleged embalming has come to be an enormous offence to the public health and to certain other public interests, and the subject is worthy of the most careful attention. Ignorant men are taught, or teach themselves to believe, that the injection of a quantity of irritant metallic poisons in solution into the interior of the body anywhere is sufficient to effect preservation and secure their fee, and embalmment *secundum artum* is now practically fast growing to be a thing of the past in this country. Gallons of poisonous solutions are pumped into bodies indiscriminately, which are in an incredibly short time imbibed by other bodies in cemeteries, saturate, and are absorbed by contiguous soils and streams, and also wells that are fed by subterranean waters which receive the percolations of graveyards filled with bodies thus treated. For example, a recent examination of the waters of Scajaquada Creek, which flows through Forest Lawn Cemetery in the city of Buffalo, demonstrated the presence of considerable quantities of arsenic of the kind commonly used in the prevalent method of embalming.

In the belief that hasty treatment is necessary to obtain the preservative effect of the arsenical solutions, now universally employed, the undertaker, in the absence of proper legal requirement to the contrary, seldom awaits the issuance of the death certificate, and I am rarely called to make an autopsical examination that I do not find that his operation has preceded and in fact superseded mine.

The movement for the purpose of bringing about controlling legislation in these circumstances began in 1888, and was the outcome of a paper which the writer had the honor to read before

the Medical Society of the State of New York. A bill with prohibitive provisions was introduced into the legislature with the approval of the State Society, and its Committee on Legislation was directed to use all proper means to effect its passage. This bill was violently opposed by the State Undertakers' Association and persons engaged in the manufacture and sale of the objectionable solutions used. Although the praiseworthy object of the measure was so far appreciated by the legislators that it was passed in an unusually rapid manner to an advanced parliamentary standing, the opponents, by superior political tactics, succeeded in preventing its being placed upon its passage, and it accordingly died, for that session, in the committee-room. The public attention was attracted to the proposition, however, and favorable efforts were at once undertaken by many eminent persons who readily recognized the importance of the subject, including judges, health authorities, lawyers, chemists, and physicians.

Two years later another bill was introduced in the form of an amendment to the penal code. This was not so sweeping in character as to the prohibitive restrictions of the former bill, but permitted of embalming by "the injection of any substance into the body only with the written consent of the attending physician and of the coroner having legal custody;" prohibited "the injection of or placing upon the body of any solution containing arsenic, zinc, mercury, or carbolic acid, except in cases of persons dead from contagious diseases by officers of boards of health, or for the preservation of bodies for dissection in legalized medical colleges."

This bill was actively advocated by a large number of the friends of the reform, and able addresses were made at the hearings by Professor Withaus, of New York, Honorable Tracy C. Becker, the president of the State Bar Association, Professor Doremus, Honorable Clark Bel', Judge Brady, and others. The bill was favorably reported by the committees of both Houses to which it was referred, but owing to the vigorous efforts of its opponents in the lobby it failed of passage, thus demonstrating once more the truth of the expression so familiar to sanitarians that "politics and science do not live upon the same street."

The measure has since been pending, and it is understood that a renewed and determined effort to correct the evil will be made during the coming winter with great prospect of success;

as the sanitary phase of the subject has become so apparent by the abuse of the practice previously referred to that a general regulation of the disposal of dead bodies is believed to be most urgently demanded.

The fact that this association has very pertinently established a standing committee for deliberation upon topics relating to the subject under consideration is regarded by the friends of this reform as a very favorable circumstance, as it is believed that all the associated important and vexatious questions relating thereto will be considered from all points of view, in connection with the work of the committee, and that without doubt the potent influence of this great organization may be secured to bring about the enactment of laws with uniformity of requirement, covering the preparation for burial, cremation, and transportation of all dead bodies. These laws should have an intra-State, inter-State, and international character, and I beg to remark that the association could not at the present time lend its powerful aid to a project of vaster or more salutary importance to the public weal.

I trust sincerely that I have succeeded by this hastily-prepared paper in presenting the legislative part of my subject in a sufficiently comprehensive manner, so that the way may seem clear to a formal reference to the committee, with instructions to report a formula of indorsement to be acted upon by the association at this meeting.

I have thus far said nothing concerning the innocuous substitutive methods which might be proposed to remedy the great evils which it has been the purpose of this article to expose. The argument most commonly advanced by the so-called funeral directors in opposition to the passage of the restrictive acts proposed is that they should not be compelled to submit to the hardship of relinquishing the use of the arsenical fluids which have been depended upon so long, when no efficient substitute can be proposed. Every chemist present knows that such an argument cannot be sustained. The truth is that it is the *cheapness* of these mineral substances in solution which chiefly recommends them for this purpose. These fluids are supplied for not to exceed thirty cents per gallon by the manufacturers, and it is the interesting difference between the cost of one or two gallons hastily thrown into the mouth and rectum (as is now the almost universal practice of the ordinary undertaker) and the probable \$30 fee that furnishes the motive for such an argument.

I am sure that every scientific gentleman of experience in this audience will join me in the assertion that at least a score of substances might be mentioned as substitutes which have far greater preservative power than the mineral substances now in use. The cost would doubtless be greater in the case of most of them, but in view of the importance of the subject, the slight reduction in the profits of the undertaker would, I think, be tolerated by the public. Even this objection would in due time be adjusted by commercial competition and the relations of demand and supply. It must constantly be borne in mind, however, that no substance, whether miscellaneous or otherwise, would properly meet the sanitary requirements of the occasion that is not properly applied by its scientific introduction and distribution throughout the entire circulatory system of the body; and what is aimed at in the proposed restrictive law is to make it a penal offence to do anything short of it, along with certain specifications of the materials which shall be used.

It seems apropos to call attention at this point to a recently-devised burial casket which is designed to meet some of the objections which can sanitarily be urged against most of the receptacles now made use of for transportation and burial. It is the invention of Dr. J. P. Hill, of Buffalo, and is constructed entirely of glass with a tapering circular opening at one end only. An end piece with grooved edges is fitted and made fast to the open end. In lieu of a description, I will pass a perspective and diagram view of the instrument which I have obtained from the inventor, and which will convey an excellent idea of its apparent merits. The caskets will weigh from twenty to sixty pounds, according to size.

It may be claimed for it, and I believe not extravagantly, that it is superior because it is cheap, light, and durable; that it can be completely disinfected without trouble and can be made absolutely air- and gas-tight; that the body may be preserved for ceremonial purposes and transportation a reasonable time without embalming; that it prevents saturation of the soil and pollution of the atmosphere in the vicinity of cemeteries, protects the remains from action of soil, water, worms, etc., and that it may be cremated with the corpse.

It appears that this would solve the problem presented by the paper of Dr. Griffith at the Montreal meeting, as there would be no possibility of contagion from it, and it is cheap enough to be within the reach of all classes.

In conclusion, permit me to state that the principal propositions for which I contend in the foregoing remarks are as follows :

(1) That the scientific preparation of dead bodies has degraded in recent years, to the extent that the prevalent system as now carelessly practised by the majority of undertakers is inefficient, and in many instances unsanitary.


(2) That it constantly leads to complications in criminal prosecutions, and entirely precludes the possibility of accurate medico-legal investigations,—thus constituting a menace to the welfare of society.

(3) That salutary and non-complicating substitutes for the materials employed are available, and that thereby the abuse of the embalming process may be entirely and satisfactorily corrected.

(4) That the great importance of this subject merits the careful attention of this association through its Committee on the Disposal of the Dead, and that proper legislation for restriction and control should be earnestly demanded in the interest of public sanitation and the public weal.

Sanitation in Indiana.¹

SCHOOLS.

ULE 1. No person affected with any communicable disease dangerous to the public health shall be admitted into any public, private, or parochial school.

RULE 2. No person shall be admitted into any public, private, or parochial school from any house or building infected with any communicable disease dangerous to the public health, or who may recently have been affected with yellow fever, small-pox, cholera, diphtheria, membranous croup, scarlet fever, whooping-cough, measles, or typhus fever until first presenting a certificate signed by a reputable physician stating that all danger of communicating such disease is past, and said certificate is approved and endorsed by the health officer in whose jurisdiction the person may reside.

RULE 3. Upon proper notification, town, city, and county boards of health shall exercise especial supervision over the

¹ Rules and regulations for the government of town, city, and county boards of health adopted by the Indiana State Board of Health, December 12, 1895.

location, drainage, water-supply, heating, ventilation, plumbing (and disposal of excreta) of the schools, school-houses, and all public buildings within their jurisdiction, and where any hygienic faults exist it shall be the duty of said board of health, upon notification of proper authorities, to immediately examine the same and advise such changes as will result in a correction of any existing defects.

DISEASES DANGEROUS TO PUBLIC HEALTH.

RULE 4. Whenever any parent, guardian, or other person having charge of the sick in his or her family or having charge of any one residing temporarily therein, shall know or suspect that such persons or person are affected with cholera, typhus fever, yellow fever, small-pox, diphtheria, membranous croup, scarlet fever, measles, or other communicable diseases dangerous to the public health, the person having supervision of the sick shall immediately give notice to the health officer within whose jurisdiction he or she may reside.

RULE 5. When any physician shall know or suspect that any person whom he is called upon to visit has cholera, typhus fever, yellow fever, diphtheria, membranous croup, scarlet fever, measles, or any other communicable diseases dangerous to the public health, such physician shall immediately give notice (together with the locality and description of the case) to the board of health within whose jurisdiction he may reside.

RULE 6. No parent, guardian, or other person having control of any child or children shall allow or permit any such child or children to go from any house or building infected with cholera, typhus fever, yellow fever, diphtheria, membranous croup, scarlet fever, measles, or other communicable disease dangerous to the public health, to attend any church, Sunday-school, or public gathering, or to travel in any street-car or public vehicle, vessel, or steamer, or to travel or to appear on any highway or street without first procuring a permit from the board of health or its proper officer.

RULE 7. It shall be unlawful for any person to enter or leave any house or building infected with cholera, typhus fever, yellow fever, small-pox, diphtheria, membranous croup, scarlet fever, or any communicable disease dangerous to the public health, to attend any church, public meeting, or place of amusement, or to travel on any street-car or public vehicle, vessel, or

steamer, or travel or appear on any public street or highway without first making a complete change of clothing and procuring a permit from the board of health exercising jurisdiction.

RULE 8. No person who is, or has been recently, affected with cholera, typhus fever, yellow fever, diphtheria, membranous croup, small-pox, scarlet fever, or any communicable disease dangerous to the public health, shall be permitted to travel or appear upon the public streets or highway, or to appear in any public place or gathering, or to travel in any public vehicle or vessel until a certificate is made by the attending physician to the board of health within whose jurisdiction the case occurs, stating that all danger from contagion by reason of such disease is past, and such certificate is approved and endorsed by said board of health.

RULE 9. Whenever the board of health or its proper officer shall know or suspect the existence of any communicable disease dangerous to the public health and there be no physician in attendance, or should any physician, while in attendance, fail or refuse to immediately report such case to the board of health, it shall be the duty of said board of health or its deputy to examine such case or cases of alleged communicable disease dangerous to the public health, and act as required by the rules governing said board of health in such cases of communicable diseases.

RULE 10. In all cases where there has been an exposure or a suspected exposure to small-pox of any person, it shall be the duty of the board of health under whose jurisdiction said person may be temporarily or permanently residing to quarantine for fourteen days such person as may have been exposed, or suspected of having been exposed, to small-pox, and to advise a vaccination or revaccination of all who may have been thus exposed. It shall be the imperative duty of the board of health to enforce this rule, and in case of refusal or neglect by said board of health to comply with the requirements of this rule, it shall be the duty of the secretary of the State Board of Health to assume charge, and either in person or by his deputy enforce the foregoing rule. All vaccinations shall be made with non-humanized virus, the only exception being that during an epidemic of small-pox, should a sufficient quantity of bovine virus not be obtainable, humanized virus may be used when sanctioned by the board of health under whose jurisdiction said epidemic of small-pox may occur.

RULE 11. Whenever a physician is called upon to attend a

case of cholera, typhus fever, yellow fever, small-pox, diphtheria, membranous croup, or scarlet fever (if such case be outside of the corporate limits of any city or town and where there is no organized board of health), it shall be his duty to placard the house in which such disease prevails by placing a flag or card not less than twelve inches square in a conspicuous place on said house; the card or flag to be procured from the county health officer on application. When the disease has subsided and the house is disinfected, the physician in charge shall cause the flag or card to be removed. When the above-named diseases occur within the corporate limits of a city or town where there is an organized board of health, the health officer when duly notified shall cause said cards or flags to be properly placed and removed. The card or flag for cholera shall be black, with the name of the disease printed in white letters. The card or flag for small-pox shall be red, and have the name of the disease printed thereon. The card or flag for diphtheria, membranous croup, and scarlet fever shall be yellow, with the name of the disease printed thereon. No person shall remove or cause to be removed (except as already provided) any such card or flag until a certificate is made by the attending physician, satisfactory to the health officer in authority, that the disease has subsided and all danger of contagion by reason of such disease is passed, and that proper disinfection satisfactory to the health officer has been accomplished. Any person causing the removal (except as provided) or mutilation of said card or flag before a proper certificate has been placed in the hands of the health officer in authority, upon conviction, shall be subject to the penalties provided in section 9 of an act passed February 19, 1891. In cities and towns flags or cards shall be provided by city or town authorities, and outside the corporate limits of cities or towns by county authorities. Every physician attending a case of small-pox, diphtheria, membranous croup, scarlet fever, or other communicable disease dangerous to the public health, shall use every reasonable precaution to prevent communicating the disease to others.

RULE 12. It is hereby made the duty of any person having charge of the remains of one who has died of small pox to cause the body to be interred within twelve hours after death, and it shall be the duty of any person having charge of the remains of those who died of cholera, typhus fever, yellow fever, small-pox, scarlet fever, diphtheria, and membranous croup, to cause said

remains to be immediately wrapped in a sheet saturated with a solution of bichloride of mercury in the proportion of one ounce of the bichloride of mercury to the gallon of water, and placed in a coffin which shall be securely closed and the coffin not to be again opened.

RULE 13. In all cases of death from cholera, typhus fever, yellow fever, small-pox, diphtheria, membranous croup, and scarlet fever the funeral shall be strictly private. No public or church funeral shall be held, or any person permitted to enter the house containing the remains except the undertaker and his assistants unless by permission of the board of health.

RULE 14. The room in which there has been a case of contagious disease dangerous to the public health must be immediately disinfected following the recovery of the sick or the removal of the remains, as follows, to wit :

All surfaces should be thoroughly washed with a solution of corrosive sublimate of the strength of one part in 1000 parts of water. The walls and ceiling, if plastered, should be brushed over with this solution, after which they should be whitewashed with a lime wash. Especial care must be taken to wash away all dust from window-ledges and other places where it may have settled, and to thoroughly cleanse crevices and out-of-the-way places. After this application of the disinfecting solution and an interval of twenty-four hours or longer for free ventilation, the floors and wood-work should be well scrubbed with soap and hot water, and this should be followed by a second more prolonged exposure to fresh air, admitted through open doors and windows. School-books or books from a circulating library shall not be taken into or removed from any house during the prevalence of any contagious disease dangerous to the public health, and if such books have been in such houses during the prevalence of said disease, they must be destroyed by the owner or library authorities, or be properly disinfected before being returned to schools or put in circulation.

MARRIAGE, BIRTH, AND DEATH REPORTS.

RULE 15. City and town health officers shall record in a record book all births, deaths, and contagious or infectious diseases, and they shall monthly turn over to the county health officer the original returns. It shall be the duty of the county health officer to make a like record of said returns in a record

book, and as soon as practicable return the original reports to the health officer from whom received.

RULE 16. All physicians, accoucheurs, and midwives in this State are hereby required to report to the secretary of the board of health of the town, city, or county in which they may occur (within five days thereafter) all births and deaths which may occur in their practice. Whenever a physician's supply of the necessary blanks on which to make a return is exhausted, he shall at once make a requisition for the same on a health officer within whose jurisdiction he may reside, and said health officer is hereby required to immediately supply the demand.

RULE 17. It is hereby ordered that each county health officer in this State shall, on or before the thirtieth day of the month following the close of each quarter, make his quarterly returns of all marriages, births, deaths, and diseases dangerous to the public health to the secretary of the State Board of Health on blanks prescribed and furnished by the State Board of Health.

RULE 18. Whenever any birth or death occurs with no physician, accoucheur, or midwife in attendance, then such birth or death shall be reported to the town, city, or county health officer by the householder or other person under whose observation such death or birth may occur. All such reports to be made within five days. In all cases of death where a coroner has held an inquest and the death has not been reported by a physician, the said coroner is hereby instructed to make such report to the proper health officer as soon as practicable after holding such inquest.

RULE 19. All persons authorized in this State to solemnize marriages are hereby required to make a report of all marriages solemnized by them to the clerk of the Circuit Court by whom the marriage license was issued in blanks furnished by such clerk within five days after the marriage is solemnized.

RULE 20. Secretaries of county boards of health are hereby directed to cause all physicians in their respective counties to report to them all deaths, births, and diseases dangerous to the public health on such blanks as are furnished by the State Board of Health and distributed on application by said county health officer.

RULE 21. In case any person feels aggrieved at any act of a health officer, appeal may be made to the State Board in session or its executive officer, but pending such appeal the act of such health officer shall remain in force.

RULE 22. All town, city, and county boards of health shall cause to be made at least once in each year a sanitary survey of their respective jurisdictions, for the purpose of ascertaining the existence of conditions detrimental to the public health, including in such survey stagnant ponds, imperfect drainage, sewerage, cesspools, and water-closets, the construction, heating, ventilation, plumbing, and disposal of excreta of all public buildings, prisons, hospitals, eleemosynary institutions, and such nuisances as might prove dangerous to the public health.

RULE 23. It shall be the duty of all health authorities, officers of State institutions, police officers, sheriffs, constables, and all officers and employés of the State, or any county, city, or town thereof, to assist in enforcing the foregoing orders, rules, and regulations.

QUARANTINE.

RULE 24. No common carrier or other person shall bring into the State of Indiana any person sick or suspected of being sick with Asiatic cholera, small-pox, yellow fever, typhus fever, diphtheria, membranous croup, and scarlet fever, or any other communicable disease dangerous to the public health.

RULE 25. When any *railway-car, steamboat, vessel, or other conveyance* coming from a place or locality declared by the State Board of Health having jurisdiction as being infected with cholera, small-pox, typhus fever, or yellow fever, or having on board any person or persons affected with any of the above-mentioned diseases, enters any part or place in the State of Indiana, such railway-car, steamboat, vessel, or other conveyance and the crew, officers, passengers, baggage, merchandise, and freight shall be subject to such inspection and disinfection as may be ordered by the State Board of Health.

RULE 26. If any person is found on any railway-car, steamboat, vessel, or other conveyance, who is sick with cholera, small-pox, typhus fever, or yellow fever, he or she shall be immediately removed by the health authorities within whose jurisdiction such person is found, and isolated and properly cared for until the termination of the disease, and the necessary expense of such isolation and care (if the person so removed is unable to pay the same) shall be a valid claim against and be refunded by the owners, agents, or assigns of the railway-car, steamboat, vessel, or other conveyance from which such person or persons were removed.

RULE 27. In case of small-pox, or persons reasonably suspected of having been exposed thereto, shall be removed from such railway-car, steamboat, vessel, or other conveyance and be isolated for fourteen days from the last exposure. In case of typhus fever, all persons reasonably suspected of having been exposed thereto shall be removed and isolated for twenty-one days from the last exposure. In case of cholera or yellow fever all persons *reasonably* suspected of having been exposed thereto shall be removed and isolated for five days from last exposure. The clothing of persons so removed, and all baggage, luggage, freight, or merchandise found on any railway, steamboat, vessel, or other conveyance on which there is any person sick with cholera, small-pox, typhus fever, or yellow fever, and *reasonably* suspected of having been infected, shall be at once disinfected or destroyed, and such railway-car, steamboat, vessel, or other conveyance shall also be disinfected as required by the board of health having jurisdiction.

RULE 28. When deemed necessary by the State Board of Health to prevent the spread of cholera, and *after ten days' notice*, each and every railway-car, steamboat, vessel in or coming into the State of Indiana, and used for the transportation of passengers, shall be provided with means satisfactory to said board of health for disinfecting the excreta of passengers and crews.

RULE 29. It shall be the duty of the conductor of any railway train, and the master of any steamboat or vessel, to immediately notify by telegram the secretary of the State Board of Health, at Indianapolis, of any case or suspected case of cholera, small-pox, yellow fever, or typhus fever occurring on board such train, boat, or vessel within the limits of the State of Indiana.

RULE 30. It shall be the duty of the board of health or other health authority of any town, city, or county to at once furnish the State Board of Health with a true copy of any quarantine orders or regulations adopted by said board of health authority, as against any foreign State or any municipality or township within the State of Indiana.

PENALTIES.

RULE 31. Any person or persons failing or refusing to comply with either or any of the foregoing rules shall be subject to the penalties provided in section 9 of an act establishing a State Board of Health, passed February 19, 1891.

ADDITIONAL RULES GOVERNING THE TRANSPORTATION
OF DEAD BODIES.

RULE 9. Shipment shall not be granted in the case of any one dying of membranous croup.

RULE 10. Permit of shipment shall not be granted upon the certificate of "heart-failure" alone, but in every case the cause of said "heart-failure" must be stated.

All rules and parts of rules conflicting with these rules are hereby repealed.

DOUGLAS C. RAMSEY, M.D., *President*.
J. N. HURTY, M.D., *Secretary*.

How Awkward It will be in 1900.

Did you ever think of it? A great problem is soon to occupy the minds of the people of the world.

In four years the sweep of time will carry us into a new century, and the figures which indicate the century of eighteen hundred will be exchanged for nineteen hundred, and we must write it 1900.

When this time comes can we abbreviate the year in writing and printing as we do now in 1896? We think not. If we may abbreviate, how shall it be done? How will this look, '00? Or this, 19'? When you write at the top of your letter to the editor, March 14, '96, it looks all right; but March 14, '00, will not be at all satisfactory.

Did you ever before think what an inconvenient time 1900 is going to be in its unabbreviatable quality? If so, just consider how lucky your stars are that you will not be living on this mundane sphere in 2000.

Fatigue.

The experiments of Masse, of Turin, and of Michael Foster, the physiologist, have shown that the sense of fatigue is due to poisoning of the cerebrum by the products of retrograde metamorphosis. "The blood of a tired animal is poisoned, and when injected into another animal causes the phenomena of fatigue." The toxicity of the blood may become so great as to prove fatal, as was shown by Foster, in rabbits that had been hunted to death—Dr. Bartour, in *American Practitioner and News*.

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EDITORIAL

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COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Pan-American Medical Congress.

THE Second Pan-American Medical Congress will meet in the City of Mexico on November 16, 17, 18, and 19, 1896.

SPECIAL REGULATIONS.

Enrolment.—In order to be properly enrolled, each member of the congress will pay to the treasurer thereof, in the City of Mexico, the sum of \$5 gold.

General Sessions.—There will be one opening session, one closing, and one intermediate session of a purely scientific character.

The opening session, which will be of a solemn character and presided over by the supreme authority of the nation, besides being attended by the members of the congress, will also be attended by the members of scientific societies, and other distinguished persons who may be invited. The session will be opened with the report of the general secretary.

This will be followed by a speech of welcome, pronounced by the president of the congress.

Two members will then speak on scientific subjects, and they will be followed by a speech from the President of the republic. It is strongly recommended that the scientific speeches should be of short duration.

The intervals between the speeches will be filled up with musical performances.

At the closing session, the general secretary will notify the place designated by the congress for holding the third meeting.

The treasurer will present his accounts to the congress, showing the disbursements made of the funds intrusted to his care.

A scientific speech will be delivered and a short speech by one representative of each one of the nations attending the congress.

In the intermediate session, four speeches will be delivered on general matters, by persons who are highly distinguished in medical science, and who, having been in due time invited to do so, have accepted the commission; one of these speeches being pronounced by a Mexican physician, who shall be invited to do so by the Committee of Management.

No discussions will be held in the general sessions.

Sessions of the Sections.—These sessions will be held from 9 to 12 A.M. and from 3 to 5 P.M., in the places that may be designated by the Organizing Committee. They shall be presided over by the president of each section, alternating with the vice-presidents of each one of the nations that are represented in the respective sections.

The person who may be appointed by the Committee of Organization will be the *ex-officio* secretary of each section, and he will fill his post alternately with the secretaries of the nations who may be represented in the sections; but should the latter not be present, their places will be supplied by the president in office.

The president will direct the discussion in accordance with the order of the day, and will decide all questions that may arise, and that may not be provided for in these regulations.

The *ex-officio* secretary will make out the minutes, and for that purpose, besides his own notes, will collect those of the secretaries who may have acted in the section. He will also collect from the persons who may have spoken the written extracts.

All questions relating to the debates which are not provided for in these regulations will be decided in accordance with general parliamentary practice.

The voting will be by name or by putting the question.

Papers, Extracts thereof, and Discussions in the Sessions of the Sections.—All papers will be presented in writing.

Each author will forward to the secretary of the Organizing Committee in the City of Mexico, and before the first day of August of the present year, an extract, not exceeding 300 words, of the paper to be presented by him. These extracts will be printed in English, French, and Spanish, and will be distributed to the members of the congress before the session in which they are to be read.

No paper will be announced which is not accompanied by this extract ; but the authors who comply with these conditions will have a right to have their work published intact in the transactions of the congress.

The reading of the papers in the sessions must not last more than twenty minutes ; when the papers are so long that they cannot be read in that time, the authors will give extracts from them, either in writing or by speech ; but they will be published intact in the transactions of the congress and in the language in which they have been written.

The extracts referred to in the preceding article will be delivered at the same time as the papers to the secretary of the section to which they pertain.

The members of the congress who may take part in the discussions in any section will present their speeches in writing at the termination of the sessions to the respective secretaries of such sections, and they will also be published in the transactions.

The papers which have been announced for reading in the order of the day in each section will serve as subjects for discussion. In such discussions no speaker will be allowed to speak more than once and for five minutes ; but the author of the paper under discussion will be allowed to reply, if he considers it necessary, in one sole speech, which will not go beyond ten minutes.

Auxiliary Committees in the Mexican Republic.—These committees will be appointed by the Committee of Organization, and will be composed of one member for each local medical society, or, in their absence, of one physician for every centre of population. They will co-operate with the Committee of Organization in promoting the success of the congress. Said committees will be appointed during the first months of the present year.

Executive Committee.—In order to form this committee, the Organizing Committee will appoint seven members, including the president, secretary, treasurer, and the Mexican representative in

the International Executive Committee, and such members will attend to everything relating to the business of the congress, in accordance with the regulations that they may adopt for that purpose.

DR. MANUEL CARMONA Y VALLE,
DR. RAFAEL LAVISTA,
DR. EDUARDO LICÉAGA.

Hydrophobia.

LYNCHBURG, VA., June 1, 1896.

DEAR MR. EDITOR:

IF you deem it worthy, and it be not a departure from your rules, may I ask that you will publish the enclosed reply to a notice made by the *New York Therapeutical Review*, of your article, commenting kindly upon my article upon hydrophobia a short time since.

Very truly yours,

W. T. WALKER.

DR. JOSEPH F. EDWARDS, *Editor of the ANNALS OF HYGIENE.*

The kindly notice of my article on hydrophobia in your valuable journal, a short time since, seems to call forth expressions of regret from the *New York Therapeutical Review*, that an esteemed contemporary like yourself should have had a word of approval for *this article utterly unworthy of notice*. Now this *New York Therapeutical Review* is a little journal published in the interest of the *Pasteur Institute*, at the small price of *twenty-five cents* per annum, its full value, as I suppose all will agree, presumes to criticise an article upon a subject of great general interest in this *unseemly manner*.

Mr. Editor, it is a well-known fact that, if you throw a stone in the dark, at random, and a dog howls, you may conclude some dog was hit, whether he had rabies or not.

W. T. WALKER,
President of the Lynchburg Academy of Medicine.

A Warning to Druggists.

To the Editor of the ANNALS OF HYGIENE.

DEAR SIR: A paragraph is going the rounds of the medical journals giving a formula for making palatable castor oil.

This formula is patented as per following list of patents:

- No. 410,940, dated September 10, 1889.
- No. 470,714, dated March 15, 1892.
- No. 470,715, dated March 15, 1892.
- No. 524,513, dated August 14, 1894.
- No. 524,514, dated August 14, 1894.

And if druggists are induced to prepare this article themselves, it will lead to a multitude of law-suits like those instituted in the "Drive Well" case.

Some scheming lawyer would like to take up this case for one-half the profits, and I think journals should warn the druggists so that they may not be caught in a trap.

Yours very truly,

A. J. WHITE.

The Danger of Allowing Dogs to Lick the Face.

The story is told in *La Médecine moderne* of a seamstress, of Berlin, who was in the habit of allowing her dog to lick her face. She was attacked one day with a severe inflammation of the right eye. Oculists were consulted, but their treatment was unsuccessful, and owing to the fact that inflammation of the left eye was beginning the right eye was enucleated. In the enucleated eye was found a *tænia echinococcus*, which the dog had probably picked up while licking some less pleasing object than his mistress' face. The danger of the transmission of parasites by dogs who are well-known to be indiscriminate in choosing objects for the exercise of their tongues, to the hands and faces of their masters, would seem to be a great one. It is surely remarkable that accidents of the kind related happen as rarely as they do.—*Boston Medical and Surgical Journal*.

Poisoning by Flutes.

Dr. J. H. Smith, in a paper read at a meeting of the Homœopathic Medical Society of Massachusetts, reports several cases of "flute-poisoning." Grenadille, or cocus wood, has for many years been employed in the manufacture of this musical instrument, inasmuch as it gives a brilliant and powerful sound, which mellows and becomes more flexible with the age of the instrument. Dr. Smith says, "There is most trustworthy testimony from Germany, England, and America to the fact that cocus wood, and no other material, is found by certain susceptible flutists capable of producing serious irritation of the lip, necessitating the use of a crescent-shaped silver or gold lip-plate, shellaced to the mouth-hole or embrasure." The author describes the malady as a lip excessively swollen, extremely red, with large blotches covered by vesicles. Relief is had by the application of a mild solution of nitrate of lead in water.—*Popular Science News*.



Backache.

It has never been in evidence why a woman's backache should generally be attributed to pelvic disease. Men have backaches, and they are not uniformly attributed to genito-urinary trouble. It seems that the practitioner might treat the owner of a backache as a patient, not as a woman.—*Kansas City Medical Index.*

New Process of Sterilizing Manuscripts, Books, etc.

Articles that cannot be exposed to a high temperature can be treated with the gas formed from formic aldehyde by a new process, described at a late meeting of the Académie des Sciences, and reported in full in the *Gazette Médicale de Liège* of February 27. The gas can be generated in another room and brought in through a tube. This process avoids the inconveniences of Hofmann's, and is much less expensive.

Sanitation in the Sixteenth Century.

We read in the *Annales de la Société Medico-Chirurgie de Liège*, February, 1896, that the city of Lyons, France, possessed a bureau of health three hundred years ago, which was a model in many respects to the most advanced products of our own century. Its regulations provided for the declaration of contagious diseases, disinfection of residence, clothing and bedding, and it is curious to note that the disinfecting materials employed comprised some of our best modern antiseptics,—sublimite, arsenic, camphor, and various essences. Our health officers will envy those of that day when they know that they were so supported by the authorities that they could enforce their regulations with penalties amounting to torture and even death in times of epidemics. "And glory to our sovereign liege, King Henry of Navarre" for his royal endorsement of such measures!—*Journal American Medical Association.*

Sweet Peas in the House.

Sweet peas have been a revival of our grandmother's favorite posy and have been much grown in the garden through the summer months, but it remained for a woman amateur florist to raise them in her window-boxes in the winter. She has twines ranged up the panes, along which the bright little flowers go wandering till they make a screen of sweetness, and the whole room is rich with their delicious fragrance. It is strange that this has not been attempted before,—not even, to any extent, in most hot-houses.

The Poplar-Tree as a Lightning Conductor.

A careful examination of the trees that are struck by lightning shows that over half of them are white poplar. From this fact scientists conclude that the poplar has some value as a conductor of lightning. This being the case, agriculturists are advised to plant these trees in the vicinity of their farm buildings. An additional suggestion is the attaching of lightning rods to two or three of the tallest of these trees. This will, it is stated, almost absolutely insure neighboring buildings against being struck and destroyed by electric storms.—*Popular Science News*.

Warm Bath for Insomnia.

According to Dr. Eccles, the use of the warm bath for the purpose of producing sleep is very efficient if properly carried out. The bath should be administered in a room whose temperature is 65° to 70° F. The patient is made to stand with his head over the edge of the tub, and his head and face are then rapidly doused with water at 100° F. The cooling of the body by the air and the hot sponging of the head send the blood to the head, dilating the vessels of the entire brain. The entire body is then immersed, except, of course, the head, in a bath of 98° F., which is rapidly raised to a temperature of 105° to 110° F. In a few minutes the patient is taken from the bath, wrapped in warm flannels, and, without exertion on his part, taken to his room. The blankets absorb the moisture; in his room the night clothes are put on, a warm bottle placed at his feet, and possibly some warm, liquid food administered. The sedative and refreshing result is often most marked.—*Medical and Surgical Bulletin*.

Roman Fever.

Roman fever is almost a thing of the past. From 650 in 1881, the deaths from malaria ran down to 254 in 1891, while for the last five years the average has been 149, the number in 1895 being 125. These figures are all the more significant in that the population of Rome has increased from 300,000 to 467,000 in fifteen years. An equally remarkable diminution has taken place in the death-rate for all other infectious diseases, so that Rome, even in the traditional unhealthy season, is one of the most healthy capitals in Europe.

Variety in Food.

It is astonishing how little attention is paid to variety in food, even in families where a great deal of money is spent on the table. In one such home, the other day, surprise was expressed at the statement that another housekeeper had provided a new dessert for every day in the month. "Where could you find thirty different desserts?" cried one. Now it has been proven that one may have a dessert for every day in the year if one takes trouble to get it up. And in the interests of the family, one should make a little effort to secure, if not this extreme, at least a relief from the current monotony in food from soup to café noir.

A Spring Dinner.

The following is a description of a dinner-table to be set in "blossom week," when apple-blooms, those loveliest of all flowers, may be obtained. The effect will be found most cool and restful, as well as transcendently lovely in its coloring. Have the round table divided into sections by a broad pink satin ribbon over the white damask cloth, which comes from a shallow basket of apple blossoms in the centre and separates off each couple of guests. The centre-piece should be set in moss and down each ribbon should be laid a narrow band of smilax. A small silver menu stand set in a trail of the blossoms should stand between each couple. The table service should be of the thinnest undecorated white china, with colorless glass, and the only color in the flower and ribbon.

The New Woman.

The prize offered by the publishers of the *Gentlewoman* for the best epigrammatic definition of the new woman was awarded to the author of the following: "A fresh darn on the original blue stocking." Among other definitions received were: "The old maid trying to be the young man;" "Six of one and half a dozen of the other;" "A creature of opinions decided and skirts divided;" "One who has ceased to be a lady and has not yet attained to be a gentleman;" "Man's newest and best reason for remaining single;" "Madam become Adam;" "Manishness minus manliness."

Food and Stimulus.

Dr. Samuel Wolfe, physician to Philadelphia Hospital, neurologist to Samaritan Hospital, says, "It was late on Sunday night: I was sitting in my office alone. I became aware of a stillness unusual for even that quiet hour. I turned to the old grandfather's clock in the corner of the room, an heirloom and highly prized, by the way. On opening the panel door in the case, I found the pendulum still swaying regularly from side to side, but not with its full range. The second hand on the face rocked to and fro with perfect regularity, but did not advance over its usual circular course. The great weights had sunken as far as the fully unwound cord would admit. I neglected to wind the clock the night before, the accustomed time for performing that weekly duty, and the faithful old servant had exhausted—almost exhausted—the last vestige of force stored there more than a week before. The food material had been all used up. I thought, will the winding restore the swing of the pendulum to its full degree? Will it bring back the tick and movement of the works and hands? I tried it and waited. The pendulum and second-hand continued their weak, purposeless movements, but they gained no power. They became even fainter. There was the force, ready to act, in the suspended weights,—enough of it to run the machinery for eight days. The weak, dying patient had been fed to repletion, but nothing had been gained. I gave the pendulum a slight push; the familiar tick was heard, the oscillating hand advanced; the clock was off for a week's run. I had given a stimulus."—*National Board of Health Magazine.*

Paradise Nuts.

Nearly 3000 miles up the mighty Amazon River, in South America, flourishes the paradise nut. It grows on a high tree, and the cap containing the fruit is so easily broken that the vast number of monkeys and other nut-loving animals of the southern jungles make away with the crop quicker than Rhode Island squirrels can stow away chestnuts. So the paradise nuts are the rarest and most costly, as well as the most delicious, that are known to commerce. There has just arrived in Providence a small lot of paradise nuts, consisting of three packages, weighing, all told, 180 pounds, and there are no others of the sort in this country. The shipment was by way of Brazil, Liverpool, and New York, and covered a distance of upward of 15,000 miles.

The Hurry Fever.

The hurry fever is rife in homes where they try to do too many things without thought or pain, and especially without stopping to consider how many of these things are worth doing at all.

We have all seen such households. Hurry to breakfast, hurry to lunch, hurry to dinner. Hurry to bed so you may be up early. Hurry to fix the furnace that you may hurry to fill the tubs, that you may hurry to wash the dress, that you may hurry to go to the party. Hurry up that we may hurry down. Hurry in because we are in a hurry to go out. Hurry to finish this game that we may have time for one more. Hurry to have the walk, for you must hurry off to church after supper. So the fretful household hurries, with knit brows, compressed lips, and tense nerves from bustling morning to bustling evening.

It would be a fruitful experience and a shrewd test for almost any one to see by actual count just how many times in a day he uses this fretful word "hurry," and how many of these times he could have just as well avoided it.

The Paradox of Judging Individuals.

Many people have a genius for seeing the faults in others, but there is one peculiarity about this faculty which will be an interesting study for the psychologist; it is the tendency to criti-

cise most sharply those faults in others which are most prominent in ourselves. In other words, that which excites our greatest antagonism is the duplication of our own traits. It would be amusing, if it were not disturbing and pathetic, to hear people criticise mercilessly traits in others which everybody recognizes as being the special possession of the critics themselves. It is pathetic because it shows how little we know about ourselves, and it is disturbing because it suggests to the listener that he may be doing precisely the same thing. In all probability he is. So little do we know ourselves, as a rule, that when we see parts of ourselves in others we detest them. If we recognized them as being in a sense our own possessions, we might not like them any better, but we should surely sympathize with their possessors. If there is any common experience which ought to draw us together, it is identity of struggle and temptation. We ought to stand shoulder to shoulder with those who are fighting the same fight which we are fighting, and who find in themselves the same tendencies to evil or to weakness; and yet these are the very people from whom, as a rule, we withdraw ourselves most entirely, and upon whose shoulders the lash of our criticism falls most mercilessly. It is a good plan, when one finds that he is specially irritated by certain traits in another, to study himself closely in order to discover whether those very traits are not his own characteristics.—*The Outlook*.

Longevity.

An interesting account of longevity in one family was recently published in the St. Thomas's Hospital reports. Mrs. B., born in 1630 (five years after the accession of Charles I.), died March 13, 1732. She was tended in her last illness by her great-granddaughter, Miss Jane C., born 1718, died 1807, and Miss Sarah C., born 1725, died 1811. A great-niece of one of these two ladies, Mrs. W., who remembers one of them, was born in 1803, and is at the present time alive and well. It will be seen from the above facts that there are three lives only to bridge over the long period between 1630 and 1896, and that there is at present living a lady who personally knew Miss C., who had nursed a relative born in 1630. The last lady of this remarkable trio is hale and hearty, and has just successfully undergone an operation for cataract.

The Greatest Railway.

It is said that the greatest corporation on earth is the London and Northwestern Railway Company of England. It has a capital of \$595,000,000, and a revenue of \$6500 an hour; has 2300 engines, and employs 60,000 men. Everything is made by the company,—bridges, engines, rails, carriages, wagons, and an innumerable lot of other things; even the coal-scuttles and wooden limbs for the injured of its staff. Repairs to the permanent way cost \$130,000 a month.—*Popular Science News*.

The Dangers of "Made Lands" of Cities.

The *Medical Press and Circular*, January 15, contains a summarized report of one of the health officers of an eastern district of London, on the unsanitary conditions of houses that have been built on ash-heaps or filled-in ground.

"The medical officer of health for Hackney has once more called attention to a besetting sin of jerry built houses. In a lately-issued report he pointed out that many of the houses in his district were built upon a layer of house refuse, which in turn rested upon a bed of clay. Such a condition of affairs naturally leads to the drawing into the house of various gases of decomposition and of other components of ground air. This danger has been discussed in our own columns for many years past. That it is a common and fruitful source of disease can scarcely be doubted. In many parts of the suburbs of London it is a constant practice of the enterprising builder to fill up with ash refuse any pit that has been quarried for stone, sand, or other material. He then proceeds to run up a more or less showy villa on this green mass of miscellaneous animal, vegetable, and mineral stuff. As a rule, the basement is not provided with an impermeable concrete flooring, so that the house settles, the drains are dislocated, and the inside of the house becomes permeated with poisonous ground air. The remedy is simple. No new house should be occupied until it has been duly inspected and certified as properly constructed by a competent sanitary authority. At present, the remedy which the tenant of an unhealthy dwelling has against his landlord is slow, tedious, and uncertain. The advent of some searching and practical domestic legislation would speedily put an end to the ghoulish race of jerry-builders."

The Whale Cure for Rheumatism.

It is reported that at the town of Eden, a place in Australia, which stands on the shores of Twofold Bay, there is a hotel where rheumatic patients congregate. Whenever a whale has been taken the patients are rowed over to the works in which the animal is cut up, the whalers dig a narrow grave in the body, and in this the patient lies for two hours as in a Turkish bath, the decomposing blubber of the whale closing around his body and acting as a huge poultice. This is known as the "whale cure for rheumatism."

Nature's Physicians.

Youth and age are merely relative matters. Many young men are more *blasé* than their fathers; and there are girls who are more worldly wise and world-worn than their mothers. When an old lady who had devoted her life to others was congratulated, at the age of 87, on her remarkable vigor, she said, "They never so often told me I was young as since I have grown old." The writer knows a lady who is "so well preserved" that she looks almost as young as her handsome daughter, who is engaged to be married. "How does she do it?" To some extent it is done for her by the vigorous constitution which she has inherited from a long-lived race. Then she had the advantage of being brought up simply and in the country. The roses of her youth were not blighted by late hours, heated ball-rooms, and indigestible suppers. In disposition she is amiable and sympathetic, and this is perhaps the chief reason she wears so well; for nothing so tends to keep the outward appearance young as the exercise of kindly feelings. Old age, then, does not depend on years so much as is generally supposed; but if we only think of years, then does it tap us on the shoulder and say that has it come to keep us company? This varies with each individual and the circumstances of his life. Aristotle said that a man is not at his best until 45. Other writers say that he is old then. The threescore years and ten of the Psalmist have been adopted by most people as the normal standard; but a writer on longevity asserts that most persons are old at 63. Some people acquiesce too readily in old age. Instead of resisting it, they make "I'm getting old" an excuse for mental and bodily laziness. Their tempers become grumpy, and they allow themselves to fall into the

boring ways of an old fogey. Others err in the opposite direction, and will not recognize the fact that they are getting on in life, and not as young as they were. So they make themselves ridiculous by dressing and acting in a juvenile way. They take liberties with their health, and play games for which they have neither wind nor limb. They force their company upon youngsters, and are indignant when these keep them at a respectful distance. Few understand the art of growing old gracefully. Youth cannot be ours always; no physician can keep us young; but there are four famous doctors who can keep us for a long time from becoming old. Their names are Temperance, Exercise, Good Air, and Early Hours. Many people do not believe in these physicians, because they are cheap, unaffected and truthful; but if they were more generally obeyed old age would stay away much longer, and when it came would be far less burdensome.—*Waverley Magazine*.

A Famous Chocolate and Cocoa.

Why thoughtful persons drink tea and coffee is, to us, always a matter of wonder. The desire for some liquid at meals is, we believe, the expression of a requirement of the system, but why this requirement should be met with tea (which is, unquestionably, a poison), or with coffee (which, to say the least, is not a nutriment), when we have chocolate and cocoa ready at hand, is, we say, incomprehensible. Chocolate is an excellent food, used by many, but not by as many as its merits warrant. The only possible objection that can be urged against chocolate and cocoa is that, when not properly prepared, they are indigestible.

This drawback does not hold good when we use the chocolate and cocoa prepared by the historical house of Walter Baker & Co., of Dorchester, Mass.

For more than 116 years this famous old firm has been giving us digestible chocolate and cocoa; so that their products may truly be said to form *the standard for purity and excellence*.

Give up your coffee and tea and try chocolate; your nerves will bless the day when you make this change.



COMMUNICATIONS.

Pulmonary Tuberculosis,—Etiology and Prevention and Treatment by Hygienic Measures.¹

BY EDWIN LE FEVRE, M.D.,

Sidney, Ohio.

PULMONARY tuberculosis, commonly called consumption, has come down to us from remote antiquity. It is essentially a disease of civilization, and was unknown among the Indians of our own country, the negroes of Central Africa, the inhabitants of Australasia, or among the Esquimaux and Laplanders of the north until carried to them by Europeans. Its geographical distribution is now coextensive with that of man himself, being only less prevalent in the cold latitudes and in the altitudes. It is the death-cause of one sixth of mankind. More than 100,000, possibly 150,000, persons die annually of this disease in the United States, or an average of about fourteen for each hour in the year. Thus we can see what a fell destroyer it is, and how important to stop its ravages in every way possible.

Consumption was known to be an infectious disease long before its definite cause was known. Villemin, in 1865, demonstrated its infectious nature by transferring parts of organs of man and animals afflicted with tuberculosis into the bodies of healthy animals, thus causing general tuberculosis in the animals experimented on. Later, Charcot, Aufrecht, and others fed ani-

¹ Read before a joint meeting of the Miami and Shelby County Medical Societies, at Piqua, Ohio, June 4, 1896.

mals with parts of tubercular organs and made them inhale the dust of dried sputum from consumptives, with the result of producing tuberculosis in the animals. The experiments prepared the way, we may say, for the genius of Koch to discover the ultimate cause in the bacillus tuberculosis, which he did in 1882. This he was able to do by a process of staining which he invented, enabling him to see these germs which had hitherto escaped detection even with high magnification. Further experiments made by Koch and his colaborers in the way of cultures and inoculations left no room for doubt in the mind of the scientific world that the bacillus tuberculosis is the cause and only cause of tuberculosis in all its forms.

This germ is from one-third to one-half the diameter of a red blood-corpuscle in length, and its breadth is about one-fifth of its length. It usually lies slightly curved but uniform throughout, except when broken by intervening spherical spaces, four to eight in number, supposed to be spores. These are said to be more numerous in rapidly-developing cases and absent in quiescent ones. It is a strict parasite, and finds its favorite soil in man and other mammals, especially the cow. It is very tenacious of life, and while it will not grow, it will live outside of the body for a long time. Animals are said to have been infected by the dried sputum kept under unfavorable conditions for 186 days. It is quite resistant to heat, and thrives best at a temperature of about 100° F. Sunlight, however, is fatal to it, a fact which has great bearing on the prevention and treatment of tubercular diseases. It is invested by a membrane dense and almost impenetrable to dyes, but when once stained strongly resists efforts at displacement. This fact, which rendered it difficult of detection at first, when once understood, makes it, by a system of double staining, all the more easy of discovery. Pulmonary tuberculosis is transmitted chiefly by means of the dried sputa. The expectorations of a consumptive are often almost a pure culture of the specific germ; these becoming dry are wafted about by currents of air and on floating particles of dust and thereby taken into the lungs in the act of breathing. There are other modes of transmitting these germs, but we shall not consider them in this paper. Much has been said about heredity in tubercular disease, and many still hold to the belief that it is transmitted in this way. There is, however, no positive proof of this, at least in the human subject. On the other hand, the evidence is largely against it. The fact

that a goodly percentage of children born of phthisical parents become tuberculous early in life is no proof of inheritance, as the possibility of infection after birth must always be admitted. If less were said about heredity and more about the communication of consumption, the world would be the better for it.

Predisposition is also assumed as an important factor in the etiology of consumption. We have heard much about the so-called phthisical habitus,—a certain conformation of the body possessed by certain individuals that predestinates them to tuberculosis. The truth is perhaps, as has been suggested by Cohnheim, that these persons are already the victims of the disease. Strictly speaking, it cannot be said that there is such a thing as individual predisposition to tuberculosis. As Whittaker¹ very tersely says, "Predisposition is probably largely a matter of quantity or number of bacilli inhaled. Conditions which markedly interfere with nutrition of the lungs may be admitted to favor the growth and retention of micro-organisms. Thus it has been noticed that individuals in whom the pulmonary artery is small easily become victims to the disease." "A man may have weak lungs as he may have a weak stomach, weak eyes, or a weak brain. This weakness may be said to constitute a predisposition to disease of any kind, and in this way only may be admitted a predisposition to tuberculosis." Knowing the cause of the disease to lie chiefly in the dissemination of the dried sputum, an effective prophylaxis rests largely on the destruction of the sputa before it becomes dry. The germ is not given off from the expectorations while in a moist state, nor from any moist surface as on the breath of the patient, but it is only when the expectorated matter becomes desiccated that the germ is air-borne and an element of danger. It is wholly in the power of the patient and his friends to prevent this. When about home the patient should use pasteboard cups, which can be obtained expressly for this purpose, or cheap pasteboard boxes can be utilized which are certainly within the reach of all,—these to be thrown in the fire before the sputum becomes dry. I am suspicious of the use of spittoons. The difficulty of keeping them clean and thoroughly disinfected is sufficient to render their use of doubtful expediency as receptacles of tuberculous sputa. When used they should always contain a solution of carbolic acid or other disinfectant.

On going from home the patient should provide himself with handkerchiefs of Japanese paper or with cloths which can be

burned before becoming dry. This is very important to the end that the sputa may never pass beyond control and be the means of infecting others. Great care should also be taken by the patient that his person, clothing, and bedclothing do not become soiled with the sputum. In no disease, I take it, is absolute personal cleanliness so important as in this. The consumptive should have his own eating and drinking utensils, which should be separately and thoroughly boiled and washed, and his bedclothing and linen should be thoroughly boiled before being washed. By a faithful observance of the proper precautions a tuberculous person need not be an element of danger to those about him, and yet no one should needlessly expose himself to the danger of infection. Sleeping in the same room with a consumptive should not be permitted, and close contact, as in the act of kissing and even handshaking, should be avoided as far as possible.

Statistics show that a large percentage of nurses and servants who are brought into close contact with these patients become infected. In 1894 the Ohio State Board of Health² sent out inquiries to all the physicians of the State concerning the contagious nature of consumption. Of the 1100 who replied, 274 cited cases showing communication to nurse, relative, or friend, and 203 cited cases showing communication from husband to wife or wife to husband. Marriage is, therefore, a fruitful means of spreading the disease, and is to be discouraged on the part of tuberculous people. The writer wishes to enroll himself among those who favor the compulsory notification of cases of consumption to local health authorities. Not that I believe these people should be isolated or subjected to a needless quarantine, but that a campaign of education should be carried on. With all that has been said on this subject, there is yet an astonishing amount of ignorance in regard to it among the masses. If these cases were all known to health authorities, the patients and their friends could be informed on these matters which certainly are to them of vital importance, and, moreover, in certain cases which would suggest themselves to every practical sanitarian, a disinfection could be carried out which would prevent houses and apartments from remaining centres of infection. Osler³ cites the result of an investigation made by Flick in one ward in Philadelphia covering a period of twenty-five years prior to 1888. Less than one-third of the houses in the ward became infected during this

period, and yet more than one-half of the deaths from consumption in the ward in 1888 occurred in these infected houses. It may be objected that the preventive measures we have suggested are harsh and over-exacting on this class of sufferers, but should they object to doing those things which are manifestly for the good of their fellow-men and those who are near and dear to them? Moreover, selfish reasons would dictate a course of rigid prophylaxis on the part of the patient. It should always be borne in mind that if a tuberculous patient lives in an atmosphere loaded with germs he is as liable as any one else to inhale these into healthy areas of his lungs, and thus add fuel to the flame that is already consuming him; and one of the things that must be carefully avoided, if the patient hopes to recover, is the possibility of reinfection.

And this brings us to the discussion of curative measures. My topic limits me to the discussion of the hygienic means of cure, and I must say that I approach this phase of the subject with all the more pleasure because of a firm belief that we have in these measures the true secret of cure, if a cure is possible. I am not here to say that medicines have no place in the therapy of consumption. I believe that certain remedies in the way of tonics, nutrients, and germicides are of value and in many cases do good, but I am equally sure that it is not safe to depend on them.

Physicians are often asked the question, Is consumption a curable disease? To this I would answer emphatically, yes; but a cure is in nearly every instance the result of hygienic or climatic treatment, and not the result of treatment by drugs. All the so-called specifics for consumption, including Koch's tuberculin, have either proven a signal failure, or at best only applicable to a limited class of cases. In the hygienic measures we have the true secret of cure. In these we include out-door life, climate, dietetics, exercise, bathing. The open-air treatment of consumption is not of recent origin.⁴ We find its merit was recognized even so long ago as the time of Galen, and to-day it is used systematically in the treatment of this disease. Admitting, as we certainly must, that a house life is favorable to the formation of tubercle, conversely, we must admit that an open-air life is unfavorable and in so far curative. Numerous sanatoria have been established both in this country and in Europe where the patients are treated on the open-air plan.

At these places patients protected from extreme and inclement weather are made to remain in the open air for ten or twelve hours each day, summer and winter. It is claimed that good results follow this plan of treatment, and that a marked improvement is often noticeable from the first week. While open-air treatment is attended with good results in almost any locality, there is almost universal testimony to the effect that it is infinitely more beneficial if carried out in certain parts of the world where the climatic conditions are such as to favor a cure; and this brings us to the discussion of climatotherapy, to which we wish to call your special attention. A mountainous region or high plateaus have been found to be the most favorable places for tuberculous people. Consumption is known to be a very rare disease among the natives of elevated regions, like our Western plateaus or mountainous regions like Switzerland, and it was early discovered that those having the disease received marked benefit on going to these elevated regions.

Indeed, this fact was known and recognized centuries before the nature of the disease was known. So long ago as 250 A.D., the great Celsus⁵ said, "As soon as a man finds himself spitting and hacking on rising in the morning, he should immediately take possession of a cow and go high up into the mountains and live on the fruit of that cow." This man knew little or nothing about the nature of the disease of which he spoke, but he did know that altitude was the best remedy.

In this country, probably, the conditions favorable to a cure are best met on the slopes of the Rocky Mountains within the States and Territories of Colorado, New Mexico, Utah, and Arizona. We have within this vast area table-lands varying in elevation from 3000 to 9000 feet above the sea-level with an ozone-laden air that is exceedingly rare, dry, and free from micro-organisms, an almost constant sunshine, and a temperature that is not subject to extreme or rapid changes. These conditions conspire to make this region the ideal one for consumptives. If we were asked to be more specific, we would say that probably the exact climatic conditions most favorable to a cure are to be found on the table-lands of Northern New Mexico, whereon are located the cities of Las Vegas and Santa Fé.⁶

The secret of cure by a residence in the altitudes is to be found first in the pure aseptic air there found. Mountain atmosphere is exceedingly free from all germ-life and as well from all

floating material that acts as an irritant to the respiratory organs, such as pollen, fungi, etc. In nearly every case of pulmonary tuberculosis there is at least in the latter stages a mixed infection, just as there is in other infectious diseases we might name. The micro-organisms of decomposition and pus-formation—the so-called streptococcus and staphylococcus—come in to intensify matters, so that we have often to deal more with a septic than a tubercular infection. We have also in unfavorable localities the germs that produce influenza, pneumonia, and malaria; these may and often do give rise to complications that hasten the death of the patient. It is not difficult to see, therefore, why the altitudes, comparatively free as they are from germ-life, should be more favorable to the cure of a disease the very existence of which depends on the presence of these microbes.

The second secret of cure, no less important than the first, is to be found in the rarefaction of the air due to elevation. This causes a more rapid breathing and quicker heart-action leading to increased nutrition of the lungs, which fortifies the cells against the invasion of the bacilli. Moreover, the rarity of the air, together with the low degree of humidity, causes a more rapid dissipation of all emanations, including the sputum from the body, and thus prevents the constant danger of reinfection, with which we have to contend where a damp, heavy atmosphere prevails. The large amount of sunshine which prevails in the altitudes is beneficial, first, because sunshine is a germicide, but principally because it enables the patient to be almost constantly out of doors. Lastly, in accounting for the benefit to be derived from a residence in an elevated region the increased amount of ozone there found must not be forgotten. Ozone has lately been shown to be an almost perfect parasiticide. Quite recently, we have seen reports from Germany to the effect that a number of cases of tuberculosis have been cured by the injection of ozone and cod-liver oil.⁷ It appears that a means of preserving ozone in stable form has been found. It is not unfair, therefore, to assume that it contributes not a little to the benefit derived in these regions.

There is almost universal testimony to the fact that life in the altitudes is attended with benefit to tuberculous patients,—causing increased appetite, better and more refreshing sleep; strengthening the heart and circulation, arousing muscular and nervous energy, and a greater activity of the skin. Many cases

even well advanced are either cured, or at least held in abeyance, so long as the patient remains under these favorable climatic conditions.

As places of resort in the Eastern States, the most worthy of mention are the Adirondacks, in Northern New York, and the Asheville plateau in Western North Carolina. Osler speaks well of the Adirondacks, and says that his patients have been greatly benefited by going to this region.⁸ At the Adirondacks Cottage Sanitarium, which receives patients only in the incipient or early stages of tuberculosis, about 25 per cent. are discharged as "apparently cured," and in 50 per cent. the disease is arrested or the patient improved.

Asheville has long enjoyed a wide reputation as a medium high altitude resort, with an equable temperature and plenty of sunshine and ozone. Not so high nor so dry as the Rocky Mountain slopes, it yet presents climatic conditions which are favorable to the cure of pulmonary disease. Some cases, in fact, do better here than in the high altitudes. Dr. Karl von Ruck⁹ has called attention to the danger of sending advanced cases or those with weak hearts to the very high altitudes, and it is well to bear in mind that no patient with serious lung or heart trouble should go suddenly to a great elevation. Some nervous cases likewise do badly in the high altitude resorts.

Advanced cases and such as do not do well in the mountains might be benefited by long sea voyages, or, better still, for those who could afford it, would be a residence on one of the sea islands, like the Bahamas or Bermudas. The air of the high seas is very free from micro-organisms and pregnant with ozone, and in the mild latitudes is favorable to the phthisical patient. The former practice of sending these people to Florida or the sea-coast of Southern California was ill-advised, and should be abandoned. With a high debilitating temperature, together with a damp, heavy atmosphere, often filled with malarial poison, death is only invited at these places. The climate of Ohio, bad as it is, is preferable.

Wherever the patient goes he should bear in mind that a cure is not to be obtained in a few weeks or months, and in many, perhaps, a majority of cases an absolute cure is not to be expected. The disease is held in abeyance, but latent foci remain to be rekindled on a return to a less favorable climate. For all such there is but one thing to do, and that is to make up

their minds to *live* in a climate in which their existence is possible.

As second in importance only to the influence of climate we would place the matter of diet in the management of a case of consumption. As long as a patient is losing weight, a cure is not in sight. When, on the other hand, he is gaining flesh, recovery may be hoped for. All agree that a gain or loss in weight is the most important symptom on which to base a prognosis in this disease. Nutrition must therefore be kept up, if within the limit of possibilities. This is often difficult in view of the great liability to derangement of the stomach. Nourishing food is one of the first requisites, and of the various articles of diet at our command milk in its various forms occupies easily the leading place. Often the patient is unable to get sufficient nourishment in three meals a day, and milk should be given between times. Other articles of diet worthy of mention are meat, fish, broths, wines, malt extracts, and the fat emulsions. Baruch,¹⁰ of New York, mentions cream cheese and steamed rice as being of special value in the dietary of consumptives. In some cases it will be found necessary to resort to rectal alimentation.

Exercise occupies an important place in the treatment of consumption, and to be of service it should be intelligently carried out and should include a system of pulmonary gymnastics. In taking exercise the patient should be careful not to go to the extreme of producing exhaustion or shortness of breath, and this admonition is the more important when in the altitudes. The amount of exercise to be taken must be regulated by the strength of the patient. While some can indulge in horse-back riding and mountain climbing, others must be content with a short carriage ride or a walk on a piazza. When there is great debility, massage should take the place of active exercise.

Bathing, accompanied with friction and exercise, should be practised for its tonic effect and as a stimulant to the skin and circulation. In short, a systematic course of dietetics, exercise, and bathing should be carried out, regulated by the nature of the case and strength of the patient, and always under the direction of a physician capable of advising.

To sum up briefly what has been said we draw the following conclusions :

(1) That pulmonary tuberculosis is an infectious disease caused by the bacillus tuberculosis, and that it is transmitted

chiefly by means of the dried sputum of patients suffering from this disease.

(2) That heredity is not proven and that individual predisposition is doubtful. Exposure to infection and environment being the chief factors in the etiology.

(3) That the prophylaxis of the disease resolves itself largely into the destruction of the sputa before becoming dry,—best done by burning.

(4) That there is no specific treatment for consumption, but that in hygienic and climatic measures we have the greatest hope of cure, or at least of holding the disease in abeyance.

(5) That the climatic conditions best adapted to cure consumption are an atmosphere rare, dry, and free from micro-organisms, with plenty of ozone and an abundance of sunshine; and that these conditions are best met in this country in the altitudes of New Mexico and Colorado.

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Bee Stings.

Liquid ammonia has long been a popular remedy for the sting of bees. A correspondent of *Nature*, however, insists that a much more effectual antidote is a mixture known as ammoniated tincture of quinine. On several occasions when stung by bees he found that the quinine mixture would give relief much quicker than ammonia alone.—*Medical Age*.

The Ultimate Cause of All Disease.

BY JOSEPH F. EDWARDS, A.M., M.D.,

Atlantic City, N. J.,

Fellow of the College of Physicians of Philadelphia ; Member of the Philadelphia County Medical Society ; Ex-Member, State Board of Health of Pennsylvania ; Foreign Associate Member, French Society of Hygiene ; Founder and Editor of
THE ANNALS OF HYGIENE, etc.

PREFACE.



WHEN one tries he can nearly always find facts seemingly corroborative of any preconceived theory, because a fertile mind can so construe, twist, turn, and interpret facts as to make them seem to prove anything. I say this without meaning that such misinterpretation of facts is intentional ; the most honest and fair-minded man who has conceived a theory, of the correctness of which he is convinced, will, so to speak, unconsciously to himself, accept only such facts as seem to prove his theory, disregard or pass lightly over those opposed thereto ; magnify those favorable to and minimize those antagonistic to it until he becomes honestly convinced that his theory is supported by facts. This, unfortunately, has been the method of research in matters pertaining to medicine too frequently, with the inevitable result that mature experience has so frequently demonstrated the inutility of deductions so made.

All that there is to-day of exact science in medicine has been the outcome of theoretical reasoning upon bedside experience, while the history of our art is crowded full of the wreckage of brilliant and promising discoveries that have had their birth in theory and their confirmation in the unconscious distortion of facts.

My apology for writing these articles is because I am prepared to offer some deductions that have had their birth in experience, their confirmation in theory, and their crucial test in successful application for many years.

Some overly-scientific minds may criticise my views from a scientific stand-point ; to such I can only say that the application of these views does cure disease ; that facts have and do prove the correctness of these views, and that, to the practical man,

who looks for practical results, if science and experience do not lead in the same direction, experience will be the more satisfactory leader to follow every time.

I am in the profession of medicine to cure disease, not solely for scientific study, and when I find a means of cure I use it and commend it to others, whether or not it may meet the approbation of the ultra-scientific.

I do not claim any discovery of new principles or facts, but a new interpretation of well-established truths that have given me and will give others most satisfactory results.

JOSEPH F. EDWARDS, M.D.

1625 PACIFIC AVENUE,
ATLANTIC CITY, N. J.

That my ideas may be correctly understood, I must start out with the fundamental and acceptable, because incontrovertible, proposition that, in the study of disease, the body must be regarded as a whole, composed of many parts, each and all interdependent, and that he who isolates any one organ or part and considers it to the exclusion of the rest is not only unscientific in his method of procedure, but cannot secure the best results.

“To begin at the end,” so to speak, I will at once assert my belief that all disease has its origin in the nervous system; that disease is never confined to one organ or part; all parts being more or less implicated (with a centre of greatest intensity), and that the only rational way to *cure* disease is to treat the nervous system.

This is the essence of my idea, the correctness of which I will offer facts to prove.

To be consistent, I must here state briefly that many years ago I was struck by the fact that so many diseased or disordered conditions, apparently local, would yield so much more readily to general than to local treatment; that while local treatment might relieve for the time, it was general treatment only that proved permanently curative. I was so impressed with this fact that I came gradually to combine general with appropriate local treatment in all disorders whether apparently local or apparently general, and it was the good results obtained thereby for years in so many cases that ultimately impelled me to look for a theory to explain these facts.

Facts first; theory second; successful application of this theory third,—certainly a strong and convincing chain.

Let us clearly understand that the human body is a collection of organic matter; the lungs, heart, kidneys, liver, stomach, bowels, spleen, pancreas, all the parts and organs of the body are collections of organic matter, all essential to life and health, but not one of them possessing in itself the power of life.

The heart is incapable of one single pulsation; the stomach and bowels are not in themselves capable of digestion; not one organ can of itself do anything; in all of them there is a latent possibility, so to speak, but in none of them an inherent potentiality.

While the locomotive engine is capable of being made to move, it is utterly unable to move because of any power inherent in the machine itself; if left to itself it would stand still forever; so the organs of the body, if left to themselves, would be dead; they are capable of function, but the power of originating or of maintaining function does not belong to them.

As with the locomotive, so with the human organs, the latent, dormant power of function must be aroused into activity, and so maintained by some agency from without.

This agency is the product of the nervous system.

There are about seventy elements in nature, and, roughly speaking, about fifteen of these elements are found in the human body. Now for a proposition: if these fifteen elements are present in proper amounts and relative combinations, we must have a perfectly healthy human body; we cannot have anything else; if this proposition is granted (and it cannot be fairly denied), then the following proposition must logically follow,—namely, that when there is any disease or disorder, it must be the result of a deficiency, or of an excess, or of a faulty or unnatural combination of these elements. Given a perfect combination of organic matter and perfect health is the only possible condition; given a disease or a disorder, and it must be the result of a faulty combination, because with a perfect combination it would be an obvious impossibility. This is a fundamental and, it seems to me, an unquestionable proposition.

Perfection of function means health; disease or disorder implies faulty function; if the power of function is derived from the nervous system, then the measure of perfection of function will be dependent upon the degree of perfection of the nervous system; this statement presupposes an integrity of the organs, for if, for instance, the heart is mechanically damaged, of course,

it is incapable of perfect function, even though it may receive the perfection of power from a perfect nervous system. But if we assume sound organs and a perfect nervous system, then we must have perfection of health and, according to the doctrine that we are enunciating, a body that is absolutely proof against the inroads of disease; this will, doubtless, be granted as a foregone conclusion, but wait a moment; I further contend that even though every organ in the body may be mechanically perfect, and capable of the perfection of function, yet such body will not be a healthy body unless the nervous system is in condition necessary to supply these organs with the requisite quantity and quality of vital force.

To make my meaning very clear, let us take the most common of all disorders, dyspepsia or indigestion. Is it not obviously wrong to speak of dyspepsia, and to treat it as though it were an entity, as though it were a disease in itself; no matter whether the faulty function of the stomach and intestines be due to a deficient secretion of digestive ferments or to a deterioration of their quality, no matter what may be the immediate and most obvious cause; the real, true, fundamental, though remote, cause must be looked for in a derangement of the nervous force supplied to the organs of digestion, for if this force is perfect, it is obviously impossible for the local causes to exist.

We often hear dyspepsia spoken of as a symptom of Bright's disease; let us trace the connection; in this disease the kidneys are incapable of completely removing waste from the blood; from this impure blood the digestive organs cannot, of course, procure pure and efficient digestive ferments, but the faulty action of the kidneys has been due, in the first place, to an inefficient quantity and quality of nerve force furnished to them, so that the indigestion, or dyspepsia, must be traced back to its primal cause in the nervous system.

Reflect, for a moment, on the folly of treating dyspepsia as an entity. Let us suppose that it is directly due to a deficiency of pepsin in the gastric juice; that this deficiency exists because the glands of the stomach lack the power of elaborating it from the blood either because of a functional weakness on their part, or because of an inferiority of the blood itself, due to the presence therein of impurities that the kidneys or other excretory organs have failed to remove. The physician prescribes pepsin and the dyspepsia is relieved, but it is relieved, not because the cause has

been removed, but because pepsin from without has been introduced to do the work of the stomach, and when this drug is stopped the trouble is not only as bad as before, but it is worse, for the following reason : use is necessary for the full performance of any function, and any function not in use gradually evolves into a condition of disability, hence, by introducing pepsin from without we relieve the stomach of the necessity of elaborating it until it finally becomes unable to do so. Providing there is no organic disease of the stomach, the obviously rational way to cure dyspepsia is to treat the nervous system so that it will be capable of supplying the stomach with the requisite quantity and quality of nervous force.

Even where there is organic disease, this same rule will hold good. When, owing to organic disease, the constitution of an organ is changed from the normal to an abnormal condition, its capacity for healthy function is lessened, but the greatest measure of work of which this damaged organ is capable can only be secured if it is supplied with an abundance of nervous force.

Let us take organic disease of the kidney,—Bright's disease, for instance ; the various forms of this disease consist, essentially, in structural changes ; the healthy, normal, tissue of the kidney, capable of doing its full measure of work, is gradually replaced by an abnormal tissue not capable of this particular work ; it is a nutritional derangement ; normally, the "wear and tear" should be met by the deposit of new tissue like unto that which has been consumed, but it is not, and why ? The kidney has no individual vitality ; it is but an agency through which the power of the nervous system becomes manifest ; all the structural changes, as well as the function of the kidney, are possible only because the kidney is supplied with nervous force ; if this nervous force were perfect, it would have been impossible for the abnormal structural, or nutritional, changes to have commenced in the kidney ; the kidney is, in reality, an automaton, acting only in response to impressions received from the nervous system ; if these impressions be wholesome ; if the nervous force is what it should be, in quantity and quality, it will be, obviously, impossible for the structural, or functional, activity of the kidney to be anything other than normal.

This is logical, and brings with it the indisputable deduction that organic disease of the kidney must have its origin not in the kidney, but in the nervous system, and that to relieve the sufferer we must treat the nervous system, not the kidney.

Again, take the man with a "fatty heart" or a "fatty liver," wherein the essential feature is the deposit, or formation, of fat instead of the normal tissue of the heart or liver. These organs have no control over their own nutritional, or structural, changes; if they had been supplied with good nervous force this deposit of fat could not have taken place; it would have been impossible for anything but normal heart or liver tissue to have found its way into these organs, and the only sensible, rational way to retard the deposit of fat, or to favor its removal, is to supply these organs with the requisite quantity and quality of nervous force.

(TO BE CONTINUED.)

The Climate of New Mexico.¹

BY FRANCIS W. GALLAGHER, M.D.,

Las Cruces, New Mexico.



THE conditions throughout the arid regions of the Rocky Mountains generally are such as to promote constructive metabolism, and for this reason are adapted to various debilitated states of the system, but it will probably be a long time before many physicians in the populous centres think of this section in relation to any except tuberculous cases and those exhibiting a tuberculous tendency. This article will, then, only consider the climate of the Rocky Mountains with reference to the amelioration or cure of consumption and conditions of ill-health favoring the development of this disease. Let us briefly consider, in the first place, what attributes of climate are by the best authorities considered essential in the climatic treatment of consumption; and, secondly, where are these requisites best supplied. The climatic conditions which the experience of years has confirmed as giving the best results in the treatment of phthisis are atmospheric dryness, altitude, and sunshine. I will not undertake to more than state this proposition, as, so far as I know, no one of authority and observation attempts to dispute it.

Where in the United States, then, are these essentials to be found in the greatest bounty? The observation and experience

¹ From the Medical Record.

of years have demonstrated that the great rainless plains and table-lands of the Rocky Mountains alone adequately fulfil the indications. Anywhere within this region the invalid is under infinitely better conditions than in the Mississippi Valley or the valley of the great lakes, but in this vast territory—an empire in extent—some sections seem particularly selected by nature for the rescue of organisms attacked by the bacillus, and I would like briefly to direct attention to that land of perpetual sunshine, New Mexico, within whose boundaries is found almost every variation of climate which the taste and physical state of the health-seeker may suggest. The possibilities of New Mexico for recreation and health are scarcely at all appreciated.

Lying within easy reach of busy little cities and comfortable and home-like villages, scattered here and there in the valley of the Rio Grande, stretch chains of towering mountains, here snow-capped and there clothed with picturesque cedars and tall pines, down whose rugged sides tumble snow-fed streams. The hunter, the fisherman, and the student of nature in her solitary moods are each here afforded opportunity according to his kind. Unfortunately, the tuberculous patient, either from obstinacy or faulty diagnosis, does not seek change of climate while he is physically able to court the goddess Hygeia by brook and mountain trail, where she is most exuberant in the bestowal of her favors. For such the towns and villages must suffice. New Mexico has many charming places where every comfort is easily procured. Individual taste as to expense and social surroundings must govern choice of location. From a social point of view, the larger towns afford, of course, greater advantages.

Las Vegas has an altitude of 6500 feet. It is a busy modern city and the largest town in the mountain country between Denver and the Texas line. It is in the area of least rainfall, and its conveniences for the entertainment of visitors are necessarily greater than those of any town within the territory named. Las Vegas is a city of pleasant homes, and many people of means have, because of its salubrious climate, made it their place of residence. There is winter in Las Vegas, and snow, which, however, does not last, but, on account of the porous and sandy soil and the dry air and sunshine, disappears rapidly, leaving the streets dry,—a surprise to those who, accustomed to Eastern experiences, associate snow and sunshine with slushy streets and mud. The summers here are delightful, and I do not think any

spot in America can offer a July and August to compare. With cloudless skies, delightful coolness, trees, lawns, and flowers, Las Vegas needs only to be better known to be appreciated. Six miles of mountain ride brings one to the famous Las Vegas Springs, renowned for its baths and the excellent quality of its waters for internal use. This spot has been called the Carlsbad of America by an eminent chemist who analyzed the waters. The hotel accommodations here are excellent.

However, from any other than a social aspect, Las Vegas is no better than other towns to the south. Mention may be made of Santa Fé, Albuquerque, Socorro, Las Cruces, and others, in the order in which they are reached as one proceeds south along the Rio Grande.

One night out by railroad train brings one to Santa Fé. It is situated on a table-land at an elevation of 8000 feet. It is a delightful place for summer residence, and for many cases of early lung involvement with apex infiltration and collapse of air-vesicles affords the condition required for restoration of function. The many historical associations and extant monuments of Aztec and early Spanish life will elicit interest and help to make the time spent here entertaining and instructive.

Not far from Santa Fé lies the busy little city of Albuquerque. Its elevation is 5000 feet, said by some authorities to be the ideal elevation for the best development of the human form. It is a city with all modern comforts and affords first-class entertainment for visitors, and during the fall, as the winter farther north grows colder, invalids go there in numbers and profit by the many advantages it offers.

One hundred and twenty-five miles south of Albuquerque lies the neglected and almost unknown Mexican village of Socorro, which, I believe, has the possibilities of the finest health resort in the Southwest. The town is situated on a plain which slopes from the base of the Socorro Mountain a mile distant to the Rio Grande. The water supplying the town comes from two hot springs in the Socorro Mountain, with volume sufficient to supply a town of 30,000 persons with water for household use. The water is free from mineral ingredients or organic matter, and is delightfully soft. The elevation of the town is 4500 feet. Only an occasional health-seeker goes to Socorro, because its advantages are unknown, and it affords no adequate accommodations. Capital will some day discover Socorro and its excep-

tional possibilities, and it will grow to be for all the West and South what Colorado Springs is to certain sections of the East.

About 130 miles south of Socorro we enter the beautiful Mesilla Valley and its capital, Las Cruces. Las Cruces already has a reputation which brings each winter many health-seekers to its doors. It is delightfully situated in a most fertile valley at an altitude of 4000 feet. It is already quite famous for the abundance and quality of its fruits, and a large quantity of excellent wine is also made here yearly. It is beyond doubt the best winter point in the Territory. The town is surrounded at some distance by mountains which protect it from the winds, and winter here is a long, delightful autumn, which permits constant out-of-door country life, free from many objections incident to residence in a city.

I have attempted only a very hurried and cursory view of New Mexico and some of its towns, with the object of affording some information which may help the invalid. I wish merely to direct the attention of those of the profession who may be seeking information about the Rocky Mountains to the incomparable advantages of this land of perpetual sunshine, and particularly to its southern half, where the summers are pleasant and the winters without the sting of the colder North which drives the invalid from out-of-door life to the confinement of ill-ventilated rooms. Other States and Territories have their distinguishing qualities, but New Mexico stands unrivalled as nature's great sanatorium for the consumptive, where she dispenses with the hand of bountiful providence those blessings of altitude, dry air, and sunshine, without which the climatic treatment of consumption would join the procession of rapidly-coming and rapidly-going laboratory failures.

Arabian Ideals of Beauty.

The perfect woman, according to Arabic ideas, should have :

Long—Back, fingers, arms, and limbs.

Large—Forehead, eyes, and lips.

Narrow—Eyebrows, nose, and feet.

Small—Ears, hands, and bust.

Round—Head, neck, arms, ankles, and waist.

Red—Tongue, lips, cheeks.

White—Skin, teeth, globe of the eye.

Black—Hair, eyebrows, lashes, and pupils.

Some Ancient Sanitary and Hygienic Rules.¹

BY F. OVERHOLT, M.D.,

Des Moines, Iowa.



It has ever been the struggle of "science," since its birth, to search for something new. It has ever been the policy of "dogma" to adhere to tradition.

Science is always searching for new facts, new theories, and new plans, and is constantly changing the order of things in an effort to better conditions.

Dogma, on the other hand, is always pointing to the record of the past and saying that the fathers knew better than we, hence we should follow the teachings of the fathers.

Science is showing us the influence of germs in health and disease and adding to that knowledge day by day. Germs, it says, explain all phenomena of disease except, perhaps, tumors, syphilis, and rheumatism, and it is likely that at no distant day these will also be explained on that hypothesis. But now comes another school of investigators, who insist that predisposition and natural resistance to disease-germs form a large element to be reckoned with. These investigators are looking to heredity, atavism, and reversion for a basis of predisposition and immunity. They tell us that the new growths are the result of the atavistic change in the cells whereby they take on the characteristics and functions performed by the particular tissue they form a part of in its more primitive state; that rheumatism, for instance, is a reversion of our functions of metabolism to the bird or reptile stage of our development, when we excreted uric acid instead of the more elaborate product of our more highly-developed organism, urea.

Of a necessity science must change her sanitary rules to meet change in theory, but dogma sticks to her tradition and insists that the old rules were established by a higher authority than science, and must be right. The Jews have followed the one dogmatic set of rules in matters sanitary and hygienic for 6000 years. The results arrived at and the mass of evidence as a result of this action cannot be ignored, and it seems to me can-

¹ From the Medical Record.

not help being of considerable value to sanitary and hygienic medicine if approached in the right spirit.

True, the rules are founded on anything but scientific grounds, and yet many of them can be defended with the facts and theories of the very latest scientific research. The Jews claim greater immunity from syphilis and tuberculosis, and a less percentage of sterility than other races. I say they claim it. I don't know that this claim rests on any true scientific basis, but it is reiterated by some of the best medical authorities we have.

One of the lecturers at Owens College, Manchester, asserts that no Jew or Jewess ever has been known to suffer from cancer, and that the immunity is due to their abstinence from swine's flesh; but this explanation cannot hold even if the first part of the statement be true, for the Mohammedans have cancer, and they also abstain from pork, though whether they are as often attacked as others or not, I have no information.

The essential part of the Jewish law, so far as this subject is concerned, has to do with circumcision, the rules of the relations of the sexes, the sorts of food allowed and proscribed, and the method of slaughter.

The male Jew is circumcised at eight days, and he ascribes his comparative immunity from venereal disease largely to this cause.

The Jewess is forbidden to have intercourse until seven days have elapsed since a "show" of blood. This rule, I am told, is strictly adhered to, and not to the effect of reducing the size of the family, as would naturally be supposed from a common notion on this point. "If a woman have borne a man child then she shall be unclean seven days, and she shall then continue in the blood of her purifying three and thirty days. But if she bear a maid child then she shall be unclean two weeks, and she shall continue in the blood of her purifying threescore and six days" (Lev. xii. 2).

Adultery was punishable with death according to the old law.

A Jew may eat of any animal which has a cloven foot and chews its cud, provided it has been properly slaughtered, or of any fish that has fins and scales. I shall now quote from Leviticus:

"Ye shall eat no manner of fat, of ox or of sheep or of goat" (vii. 23).

“Ye shall eat no manner of blood, whether it be of fowl or beast” (vii. 26).

“Whatsoever parteth the hoof and cheweth the cud among the beasts, that shall ye eat” (xi. 3).

“Whatsoever have fins and scales in the waters in the seas and in the rivers, them shall ye eat” (xi. 9).

“Yet these may ye eat of every flying creeping thing that goeth upon all four which have legs above their feet to leap withal upon the earth” (xi. 21).

“Even these of them ye may eat: the locust, beetle, and grasshopper, but all other flying creeping things which have four feet shall be an abomination unto you” (xi. 22).

“And these are they which ye shall have in abomination among the fowls; they shall not be eaten: eagle, ossifrage, osprey, vulture, kite, raven, owl, night-hawk, cuckoo, hawk, cormorant, swan, pelican, stork, heron, lapwing, and bat” (xi. 13).

It is interesting to note what the Koran says in this connection,—viz., “Ye are forbidden to eat that which dieth of itself, and the blood, and swine’s flesh, and that which has been slaughtered or killed by a blow or by a fall or by the horns of another beast, and that which has been eaten by a wild beast.”

The Jews eat nothing that has been shot or trapped; in fact, none but domestic animals, and only those that are properly slaughtered. This brings us to the most important part of our subject, except, perhaps, the proscription of pork,—namely, the method of slaughter.

A Russian by the name of Dembo has investigated this question, in its relation to cattle more particularly, and I shall quote quite extensively from him. Before taking up Dr. Dembo’s work I will quote from Professor Dr. W. Preyer, of the University of Berlin: “As I have declared in a report based on observations and experiments in the laboratory and in the slaughter-house, the method of *shechita* which is practised by the Jews with remarkable success is superior to all other methods of killing, because it is the safest and most expeditious, because the animals killed by it are subjected to the least amount of pain, and by it the removal of the blood is effected in the most complete manner.”

I am too little acquainted with the history of the Jews and with the Jewish ritual law to understand why they have for cen-

turies adhered to the latter with astonishing pertinacity ; but that this consistency is well justified from the stand-point of physiology, that it much better answers the humane purpose of the protection of animals than the uncertain methods of the Christian butchers, and that it is better calculated to further the well-being of the nation than the other, is proved and established.

Dr. Dembo claims that the Jewish method of slaughter is more humane, more hygienic, and more economical than any other method, and he proceeds to prove his claim in a lengthy monograph. The matter of determining which of the methods of slaughter is most humane is of great importance and is gone into at considerable length by Dr. Dembo, and as a result of many personal observations in the slaughter-houses of England, France, Germany, Switzerland, and Italy, he concludes that the Jewish method is most humane, because consciousness on the average is lost sooner than by any of the other methods, as, for instance, transfixion, stunning with a mallet, with a pole-axe, Bruneau's mask, shooting, or the neck stab ; consciousness is lost in from three to five seconds by the first-named method.

Approaching the subject from a hygienic stand-point, I shall first give a butcher's reasons for using the Jewish method :

"Because it combines the most humane treatment of the animal with the greatest safety in killing it. The *shechita* cut is indisputably the most rapid and safe mode of slaughtering. The fact that the cut is made with a sharp knife, which occasions no swelling of the arteries and allows a great outflow of blood to take place in a few seconds, shows this to be the most rapid and at the same time least painful mode of slaughtering, for the sharper the instrument the less painful the cut. Stunning is attended with much more danger and too often with much more pain to the animal.

"It often, when the hand that carries it out is not a thoroughly practical one, results in torture to the animal. The slightest movement of the head by the animal at the moment of striking will cause the blow to fall wrong, the most skilful slaughterman being unable to prevent this, and no matter whether the ill-falling blow cause the animal pain or whether it be only frightened and excited to movement by it, the result in any case is that the killing is protracted and made more difficult.

"Viewed from the stand-point of economy the stunning methods are unquestionably more advantageous to the butcher,

for every stunned animal yields a greater weight of meat ; this is because the blood remains stagnant in the veins as the result of the blows, and when the arteries are afterwards cut the blood flows out very slowly, the total loss of blood being always less than in the case of throat-cutting direct, and the weight of meat consequently greater. But the consideration of the few pounds of meat less by the Jewish method is many times outweighed by its hygienic advantages.

“Every animal stunned and then cut must afterwards be washed, especially in the cavity of the chest, with pure water. But it is well known that water has the worst possible effect on meat, especially during the hot summer months, when a great deal of meat spoils through this washing.

“The meat of animals killed in any way with blows is also much darker and always softer than that of cut animals, the flesh of which is in every case light in color, free from blood, and firm. Every animal killed by the cutting method is clean in the cavity of the chest, and there is no need to touch the flesh there or elsewhere with water. The flesh of cut animals is as firm in two hours as that of stunned or felled animals in ten, and the latter, indeed, never attains the firmness of the former.”

Now the main reason for the better bleeding by the *shechita* method is that during the whole time of bleeding the nerve centres regulating the flow of blood in the vessels are not interfered with. Whereas, in the case of stunning and particularly in the case of the neck stab with injury to the spinal cord, as in all other methods depending for their effect on injury of the brain, the case is altogether different, since, as Koch, Wittkowsky, and others have proved scientifically, destruction of the brain causes paralysis of the vasomotor centres, and this paralysis in its turn would entail a stoppage of blood within the blood-vessels. The reason for the quicker rigor mortis, greater firmness, and hence more pronounced keeping qualities in cut meat is that a great and rapid loss of blood promotes the formation of lactic acid in the meat and decreased alkalinity in what blood remains ; or, to quote again from Dembo : “Keeping in mind that the blood forms an excellent nutrient medium for the lowest forms of vegetable life, that germs that have accidentally found their way into it multiply with an extraordinary rapidity, that these micro-organisms cannot grow in acid tissue as well as they do in alkaline, and further remembering that in the Jewish method not only is less blood

retained in the meat, but also the alkalinity of the blood retained lessened by more than half by the violent convulsions, and finally that the same convulsions as well as rapid bleeding considerably advance and promote the formation of lactic acid; considering these facts it will be evident that no doubt whatever can be entertained as to the fact that the growth of micro-organisms will proceed (all other conditions being equal) much more slowly in the meat of animals killed in the manner of the *shechita* than in meat of those killed by any other method."

From an economical stand-point the stunning methods are more advantageous to the butchers and less so to the consumer, and, on the contrary, the Jewish method is more advantageous to the consumer and less so to the butcher.

The Relation of Sex to Longevity.¹

BY J. M. FRENCH, M.D.,

Milford, Mass.



THE consideration of those elements in the individual which influence the duration of life, while not recognized in that narrow view of the physician's calling which looks upon him merely as a healer of the sick, is yet an essential part of his broader and more important work, the physical improvement of the race. No apology is therefore needed for calling the attention of our readers to a branch of this subject, in the hope that it may prove to be of general interest, since the desire for long life is universal.

Some of these elements, such as residence, occupation, diet, and habits of life, are in a greater or less degree under the control of the individual, and capable of being modified by his intelligent co-operation. Others are wholly removed from such control, were determined before his birth, and are incapable of change. In this class the element of sex fills an important part.

An investigation of this subject calls for a consideration of the following points: First, as to the facts. To what extent does the average duration of life differ for males and females? How does the mortality of the two sexes compare, both as a whole and

¹ From the Medical and Surgical Reporter.

at different periods of life? In what proportion of cases do males and females reach advanced life, and which most frequently attains the extreme limit of longevity?

Next, as to conclusions. Wherein do these differences originate? How far are they due to certain peculiarities inherent in the sexual constitution? How far to the physiological and pathological results of sexual activity, and how far to external conditions incidental but not essential to the one sex rather than the other?

Let us consider first the comparative duration of life in males and females. According to the English life tables of Dr. Farr, which are based upon the experience of the total population of England and Wales for a long period of years, the expectation of life at birth of males is 39.91 years, and of females, 41.85 years; at 10 years of age the expectation of males is 47.05 years, and of females, 47.67 years; at 30, of males, 32.76 years, and of females, 33.81 years; at 50, of males, 19.54 years, and of females, 20.75 years; at 70, of males, 8.45 years, and of females, 9.02 years; and in general it may be stated that the expectation of females is slightly greater than that of males at all ages. This conclusion agrees with that of observers generally, whenever the whole population is considered, but differs materially from the results of those life insurance companies which insure both sexes. This is shown by the American experience tables, compiled from the experience of thirty American companies. These show a less expectation for females than for males, in all but nineteen years, during which period it is either equal or slightly greater for females. "This," says Actuary O. B. Ireland, an acknowledged expert in insurance statistics, "is presumably because the classes of women whose lives are offered for insurance are not, sanitarily, a fair average of the population; and because of the greater difficulty of getting a medical examination that shall truly discriminate."

Secondly, let us examine the comparative mortality of the sexes, both as a whole and at different periods of life.

The United States Census for 1880 gives the average death-rate for males as 15.35, and for females, 14.81.

The Massachusetts Registration Reports show that the average annual death-rate in that State for the six census years, 1860, 1865, 1870, 1875, 1880, and 1885, was 20.4 per 1000 for males, and 19.4 for females.

Certain of the fraternal benefit orders which insure both sexes give as the result of their experience conclusions slightly at variance with that of the thirty American life companies already quoted. Thus, the order of Chosen Friends has 37,644 members, of whom 11,732 are females. Their death-rate for fourteen years averages 10.60 per 1000 for males, and 8.15 per 1000 for females. The Knights and Ladies of Honor have more female than male members. In a report for fifteen years they say females as a class are still proving to be better risks than males. The death-rate each year, without exception, among the former has been less than that among the latter. The American Legion of Honor also reports a balance in favor of females.

Dr. Farr's English life tables show a mortality at all ages combined of 23.3 per 1000 for males, and 21.5 for females. This proportion does not hold good, however, for each of the different periods of life; for from 10 to 35 the mortality is greater for females, while at all other ages that of males is greatly in excess. This shows plainly the unfavorable effect of approaching puberty and the early years of childbearing upon the mortality of females. Dr. Block gives tables compiled from the vital statistics of eleven different countries of Europe, in which the average results correspond very nearly with those given above, although in some particular cases they differ materially.

Another table given by Dr. Farr shows that out of every 1,000,000 persons born, 511,745 are males, and 488,255 females; being an excess of 4.81 per cent. of males. Of these, there die during the first year of life 83,719 males and 65,744 females, leaving at 1 year of age an excess of 1.31 per cent. of males; and in the succeeding years the numbers dying of each sex are such as to leave at 8 years of age an excess of 1 per cent. of males; at 15, an excess of 1.18 per cent. of males; at 37, of 2.08 per cent.; at 50, of .93 per cent.; while at 53, there is an equal number of males and females; at 70, an excess of 8 per cent. of females; at 80, of 19 per cent.; and at 90, of 41 per cent. of females.

A table given in the Massachusetts Registration Report for 1890, compiled from a total of 869,694 deaths in that State for a period of twenty-six years, shows that from birth to 10 years of age the male death-rate is in excess; from 10 to 40 that of females is in excess; from 40 to 50 they are about equal; from 50 to 70 the male death-rate is again in excess; and after 70 a larger

actual number of females die, though a less proportion of the number living at that age.

A comparison of these different tables enables us to formulate the following general conclusions, subject to local and temporary variations :

(1) From birth to puberty the death-rate is higher among males.

(2) From puberty to the menopause females have a higher death-rate than males.

(3) From the age of the menopause in women to the end of life, the death-rate is higher among males, although after the age of 70 the actual number of female deaths is greater, as more have survived to reach that age.

(4) The total mortality at all ages combined is slightly greater among males.

Thirdly, we come to the consideration of the next point at issue,—namely, the proportion of males and females reaching old age, and also the extreme limits of advanced life.

In New York City, out of 27,003 deaths, 111 were of persons over 90 years of age, and of these 77 were females and 34 males.

In Massachusetts, out of a total of 391,484 deaths from 1880 to 1890, there were 203 at the reported age of 100 years or over, and of these 153 were males and only 50 females. Eight out of the 203 centenarians had reached the age of 110, and of these 6 were females and two males ; and the oldest of all was a female, who had reached the great age of 118 years.

The *London Morning Post* finds that 1151 cases of octogenarians were reported in its columns in a single year, and of these 646 were females and 545 males. Above the age of 80 the proportion of females rapidly increases, so that at the age of 100 there are five times as many women as men.

Dr. Farr's English Life Table, No. 3, states that out of males living at 20, 1 in 3 reaches 70, 1 in 8 reaches 80, and 1 in 70 reaches 90 ; while of females living at 20, 1 in $2\frac{2}{3}$ reaches 70, 1 in $6\frac{3}{4}$ reaches 80, and one in 49 reaches 90.

Hufeland, in his "Art of Prolonging Life," lays down the diction that "more women than men become old, but men only attain to the utmost limits of longevity." The first part of this law seems to be amply sustained by the figures we have given ; as to the second part, the indications are opposed to his conclu-

sions. It is no doubt true, however, that the larger proportion of historic instances of extreme longevity—*i.e.*, reaching 150 years or more—are of males; but it is also true that but very few, if any, of these cases can be considered as well authenticated.

The investigations of Professor Cæsar Lombroso and William Ferrero, as detailed in their recent work, "The Female Offender," while not coming under either of the divisions we have adopted, are yet pertinent to the question as a whole. "Women," they conclude, "are not longer-lived than men, but have greater powers of resistance to misfortune and deep grief. This is a well-known law, which, in the case of the female criminal, seems almost exaggerated, so remarkable is her longevity and the toughness with which she endures the hardships, even the prolonged hardships of prison life. It is a well-known fact that the number of aged female criminals surpasses the male contingent. Some denizens of female prisons have reached the age of 90, having lived within those walls since they were 29. Between 1870 and 1879, the inhabitants of prisons and convict establishments in Italy who were over 60 years of age showed a percentage of 4.3 among the women, and 3.2 among the men. Over 40 years of age the proportion of females is greater; under 40, of males. These figures show how many more female offenders reach advanced ages than males, and prove also how the women stand punishment better. For among male criminals the number condemned to the galleys for life, or for longer periods of time than ten years, is far greater than among women."

It remains to consider the causes which lead to an increased death-rate of one sex rather than the other, modify the mortality-rate of each at different periods of life, and result in the slightly greater average longevity of females.

The strongest argument in favor of an original and fundamental difference of constitution and vitality due to the element of sex *per se*, is found in the greatly-increased death-rate of males at both extremes of life. In early infancy especially, when it cannot be supposed that they are any less well cared for, or suffer from a more unfavorable environment in any direction than females, it is found that males die in so much greater proportion than females that the excess of nearly 5 per cent. of males at birth is reduced to less than $1\frac{1}{3}$ per cent. at the end of the first year, and still further at the end of five years. As old age comes on, the difference in the environment of the sexes disappears, the

conditions of childhood recur in a measure, and the male death-rate is again largely in excess.

Another proof of the same fact is found in the greater tenacity of life on the part of the female members of the criminal classes. This is shown under unfavorable environment, and conclusively proves her to possess greater innate endurance than do the male members of the same classes.

The increased mortality of females from puberty to the menopause is manifestly due to the sexual organization and functions. It is not, however, due entirely to either the physiological or pathological results of childbearing, as it exists to some extent in all classes of females, whether virgin or married, fruitful or barren. Furthermore, it begins at the first approach of puberty, and is but slightly manifest during the menopause or the years immediately preceding it.

Much is no doubt due to the environment of the sexes, which differs greatly during all the years between childhood and old age. Throughout the whole of this period, women in the main lead lives more favorable to longevity than men. They are less robust, and oftener under the doctor's care; but their illnesses are largely functional in their nature and of a kind not likely to prove fatal. They lead more quiet and regular lives than men, are less inclined to indulge in dissipation and excesses, and have fewer bad habits to sap their vitality. Especially do they suffer less from the effects of alcoholic intemperance. They do not, as a rule, engage in any single hazardous employment, such as those connected with railroading, electric power and lighting, mining, and the more dangerous branches of manufacturing. So, too, they are excluded from the army, the navy, and the merchant marine service. They are, therefore, less exposed to death from accident or violence. Neither do they suffer in an equal degree with men from atmospheric vicissitudes.

On the other hand, women suffer more than men from impure air, faulty modes of dress, confinement in-doors, and lack of proper exercise; and hence suffer more frequently from certain forms of disease, notably pulmonary consumption, disorders of digestion, and maladies of the reproductive organs.

A Case of Septicæmia from Sewer-Gas.¹

BY ARTHUR P. PERRY, M.D.



MS. A. B., primipara, aged 28 years, was delivered by forceps after a labor of twenty-four hours. The head was low down when these were applied, and the child was easily extracted, no violence being done to the mother's parts. The usual precautions were observed as to asepsis in the instruments, hands, etc., and a post-partum douche was given.

Mother and child did well for three days. On the fourth the patient had a chill, with a temperature of 103° F. There was, however, no uterine tenderness, and the lochia continued to flow. There was good secretion of milk and no trouble with the nipples. A thorough examination of the other organs failed to show any cause for the rise in temperature.

This had continued for a day or two when a disagreeable odor was noticed in the sick-room, apparently localized about the bed, which was in a corner. Careful inspection of the patient and the bed did not disclose the source of it, however.

Suspecting that the odor might come from a dead rat in the walls or floor, I urged the removal of the mother and child to another room, but to no purpose. The husband thought that "the place was good enough" for his wife, and could not be made to believe that there was any harm in the odor.

Finally, investigation was made in the cellar directly under the room in which the patient lay, and here the cause of the trouble was found. A bath-room was situated across the hall, just outside the sick-room. From this a four-inch soil-pipe ran under the floor and through the underpinning of the house at a point under the head of the bed. After passing through the wall the iron pipe terminated some two or three feet from the house in an earthen pipe, which ran about twenty-five feet and emptied into a cesspool. This earthen pipe was much larger than the iron pipe, and at the joint the plumbers had merely brought the two to meet each other and run cement around the joint. The frost had "heaved" the pipes and broken the connection, allowing

¹ From the Boston Medical and Surgical Journal.

some of the contents to find their way along the outside of the iron one and into the cellar directly under the head of the bed, and even that side of it on which the patient lay most of the time.

As soon as this was discovered, the patient was removed to another room at a safe distance, a trained nurse was engaged, and recovery began to take place, she finally being discharged well.

The pipe-connection having been repaired and disinfectants used, the foul odor disappeared. Great care should be taken in building houses to have a trap in the soil-pipe outside the house wall and easily reached.

In Boston the law requires that plumbers shall carry the soil-pipe ten feet out from the building, and this is usually the limit of their contract. Earthen pipe is somewhat cheaper than iron, and for this reason connection between the point where the plumber leaves off and the sewer is nearly always made with this. It is unsafe to do so, however, on account of earthen pipe being so easily broken by frost, settling of the ground, etc. The iron soil-pipe should be carried completely into the sewer or cesspool, be it as distant as may be.

Some Remarks on the History of the Greater Epidemics of the Past, and the Manner of Transmission.¹

BY U. O. B. WINGATE, M.D.,

Professor of Diseases of the Nervous System and Hygiene in the Wisconsin College of
Physicians and Surgeons, Milwaukee, Wis.



IT is only possible, during the few moments allotted to me at this time to refer, in the briefest possible manner, to some features of certain epidemics in the past. I shall only consider the four diseases which stand at the head of epidemics,—namely, the plague, Asiatic cholera, yellow-fever, and small-pox.

I. THE BUBONIC PLAGUE.

This is a disease of great antiquity. The first extensive epidemic of which history has given us any definite account

¹ From the Journal of the American Medical Association.

occurred in the sixth century, is described as "the plague of Justinian," and is said to have persisted during nearly the whole of that emperor's long reign. It probably originated in Lower Egypt in the year 542 A.D. It swept with increasing fury over Asia Minor; it also visited Constantinople with the result that for some days people died, so it is related, at the rate of 10,000 daily. For seventy years this disease raged in all parts of the then known world, and its victims were numbered by millions. In the fourteenth century it appeared under the name of the "black death," and is said to have destroyed 13,000,000 people in China, 24,000,000 in other Oriental countries, and not less than 25,000,000 people in Europe. The same disease is classed under the head of "the great plague of London" which occurred in 1665, when the total number of deaths is placed at 100,000. The same plague occurred at Marseilles and Toulon in 1720. Its last appearance in Europe was reported to be at Dalmatia and Turkey in 1840-41. The bubonic pest, however, has never ceased to exist in China, showing itself more or less frequently, and spreading from there, from time to time, to Persia, Arabia, and Asiatic Russia. It is probable that for the past fifteen years it has continually existed in the southern part of China, and the recent outbreak there shows that its virulence is no less than existed formerly. According to the official reports for the six months from February to July, 1894, inclusive, in Canton, which has a population of about 1,000,000 there were 180,000 deaths. The official reports from the city of Hong-Kong up to August, 1894, showed that 2504 deaths occurred from this disease out of a population of 200,000. It is, however, believed that as every Chinese man or woman, when seized with it, got over to the mainland, if he or she possibly could, the actual number of deaths out of that population was probably much higher.

The death-rate is simply enormous. Versin places it as high as 95 per cent. even in hospitals. In this recent outbreak the disease occurred among the Chinese principally, more especially among women and children, and among those who were the least able to resist the invasion of any disease. It was also observed that it raged worse among families living on the first floor of houses next to the ground, and that those living on the water, in many instances, escaped, which leads us to believe that the condition of the soil has something to do with the spread of the disease.

From the investigations made by Kitasato and Versin, there is no longer any doubt that the bacillus has been isolated by them, and, thus far, they have been unable to observe that the bacillus has any spores. It is claimed that the bacillus enters the human body by three channels,—through the respiratory and digestive tracts and through an external wound. It seems to be a disease of poverty, and flourishes best in over-crowded localities where there is a lack of proper ventilation, personal cleanliness, and proper and sufficient diet. It is a typical infectious disease; a filth disease caused by a bacillus. There is no doubt that it has been and can be transmitted through merchandise, such as rags and other material, that may be shipped from one place to another. Just how long the bacillus may live under certain conditions does not seem yet to have been demonstrated, but it is believed that it will live for a long period under favorable conditions. We do know, however, that it can be easily destroyed by the degree of temperature employed in disinfecting by live steam. It is probably transmitted by food, drink, and air. Like cholera, it has followed the channels of commerce. In the recent outbreak it found its way from Yunan along the southern border of Kwang-See to Pakhoi, from whence it travelled northward through the Kwang-Tung province to Canton. From the latter city it was readily conveyed to Hong-Kong by persons removing while actually suffering from the disease, or during the period of incubation. It only requires about eight hours of time, by steamer, to pass between these two cities, and in the late epidemic it was quite common to have several deaths occur on the passage between these two points. According to Mr. Rocher, pigs, goats, rats, and other animals die in great numbers before man is affected, and it has been noted that a high mortality exists among these animals two or three weeks before cases of plague are noted in the human family. Just what the relationship may be in regard to this matter is a question not yet fully worked out or understood. Versin has called attention to the results of his autopsies of animals, which showed that many dead flies are found. On examination of their bodies, he found them to contain the plague bacillus, and an inoculation of guinea-pigs from such flies caused death within forty-eight hours with specific lesions of the disease. There is not much question that this disease may be carried to any part of the civilized world, and an outbreak in any locality should be watched very carefully by sanitary authorities.

II. ASIATIC CHOLERA.

The history of epidemics of this disease, prior to the seventeenth and eighteenth centuries, is so imperfect that we cannot depend very much upon it. Mention is made of it in the Sanscrit and Chinese writings; it is also spoken of by Hippocrates, Celsus, Galen, and others, but we do not find a clear description of it, as existing epidemically, prior to the seventeenth century. Since then it has occurred as an epidemic in so many localities that it would be impossible to name them all. As long ago as 1768-71, Sonnerat described an epidemic in the neighborhood of Pondicherry which destroyed 60,000 lives. In what was then known as French India in 1780-81 it also prevailed, and we also have reports of epidemics occurring in Madras from the years 1774-82. The first really famous epidemic dates from Jessora in 1817, although it has been proved that other cholera epidemics existed in India prior to this. In 1817, in Jessora, a city some forty hours ride northeast from Calcutta, there existed a patient who had been seized in the night with violent vomiting and diarrhœa. A local Indian physician called on an English physician, Dr. Robert Tytler, to see this patient. He found him moribund, and thought at first that it was a case of poisoning, but when he learned that some seventeen other cases had been attacked at the same time and had quickly died, he came to different conclusions. This was a case of genuine Asiatic cholera, and so rapidly did the epidemic spread that within two months, in the city of Jessora, more than 10,000 of the inhabitants had died. During this same year the disease prevailed throughout the whole of English India, reached Calcutta in September, and caused a heavy mortality. An army encamped on the banks of the Sind lost within a short time 764 officers and European soldiers and about 8000 Sepoys. In the first year the number of cholera victims is given as 600,000. It is possible that this number is somewhat exaggerated, as statistics under such circumstances are unreliable, and were especially so at that early age. Cholera spread over all of Bengal in 1818, and it is reported that in Benares 15,000 persons died in two months. Epidemics spread northwardly, then westwardly, then southwardly along the coast of Coromandel, and out of 18,000 men composing General Hastings's army, stationed between Bombay and Calcutta, 9000, or 50 per cent., died in a short time. In 1820, Bengal was again severely attacked and the epidemic penetrated to Cochin China,

also to Canton. In 1821 the disease passed across the mouth of the Indus and spread itself along the coast of the Persian Gulf, whence it extended into the interior of the land. It soon appeared in Bagdad and other places. It spread also towards the East, sowing everywhere the greatest destruction, especially in Borneo and Java; the latter place is said to have lost 100,000 inhabitants. In 1823, Burmah and the empire of China, the latter especially, were severely attacked with cholera, and about this time it showed itself for the first time on Russian soil. It spread in a westerly direction and invaded the empire of Russia. In 1823 it penetrated the very borders of Europe. In the following three years cholera made but little progress in the two threatened divisions of the earth, Europe and Africa, and towards the close of the year 1826 the hope was cherished, says Lebert, that the epidemic was near its end, but as early as the beginning of 1827 it appeared with renewed intensity in Calcutta, and here is mentioned, for the first time, that many animals also showed the influence of the disease. In 1830 its advance towards the northeast was more positive than before. It soon again extended on the coast of the Caspian Sea; Orenburg, which had been already reached in the last months of 1829, was again attacked, and, it is related, one-tenth of the whole population was seized with cholera.

There is something peculiar in the mode of transmission of this disease, inasmuch as in times past it seems to have encircled the world, when it has once started, before the pandemic has ceased. While it has been said to be a water-borne disease, there are some facts which hardly coincide with this theory, for we find it has travelled over mountains and through every part of the known world, apparently independent of water-courses. Early in 1831 it appeared in Mecca and raged with great violence; later it appeared in Alexandria and Cairo; the latter place is said to have lost 30,000 people by it in the first months. In Egypt the disease penetrated up the Nile to the higher regions of this country. Constantinople was also attacked within this year, and Smyrna was seized and suffered very severely from it. It occurred in the same year in various parts of Russia, and on August 30 entered Berlin, where it caused 2500 deaths among 200,000 inhabitants. In the northern part of Germany, at this time, it was observed to affect chickens, pigeons, and in many rivers fish perished in great numbers. In October it reached England and

soon spread over the islands of Great Britain. The following March it reached Paris, where it raged with extraordinary intensity, destroying one-forty-third of the whole population. About the middle of 1832 it crossed the Atlantic Ocean and appeared in North America at Quebec and Montreal, travelling quickly from there to New York, Philadelphia, and Baltimore, and as far south as New Orleans. In 1833 it invaded the Mexican States and was very severe in Vera Cruz and Mexico. Since that time the history is familiar to nearly every one. Its home is well known to be in India, where it is constantly present, and from which place, when once started, it spreads to all parts of the world before it stops. It reached this country again in 1848, appearing first at New Orleans, and again in 1853-54, extending over a considerable portion of the United States. The next great epidemic in Europe persisted from 1865 to 1874, about ten years. Europe then enjoyed a complete immunity for a period of ten years, or up to 1884. In 1883 the scourge made its appearance in Egypt, where in three or four months it occasioned a mortality of from 30,000 to 50,000 of the inhabitants. In the autumn of 1887 it made its appearance in the port of New York, but was controlled by prompt and efficient measures of isolation at the quarantine station. It again appeared at the same port in 1892, where it received like treatment. The epidemic of cholera in Europe in 1884-85 is said to have cost France 15,000 inhabitants, Spain 180,000, Austro-Hungary 4000, Italy 50,000, Malta 500, making a total, approximately, of 250,000 inhabitants of Europe.

We know that the specific germ of cholera, as well as that of the plague, has been isolated, and the value of the discovery of the germs of these two diseases cannot be over-estimated, for it enables us to take definite precautions to prevent an introduction of these diseases and to control them if introduced. But there is much to be learned concerning the habits and conditions favorable to the propagation of the germ of cholera. We believe we can control it if we can persuade the people to be liberal in their appropriations of money, which is necessary in order to take the requisite precautions. Then, again, it is of the greatest importance to be enabled to control the people should an outbreak occur.

In concluding this portion of my subject, I wish to refer to the very large increase of diarrhoeal diseases that has prevailed during the past year, and especially in our own State. The idea

has been suggested that the great prevalence of diarrhœal diseases is indicative of approaching cholera. Is it possible that such conditions, with others, may favor or invite this disease, and may such conditions not be a part of the general causation, while the germ completes the cause?

III. YELLOW FEVER.

Haenisch says, "The Antilles were probably the cradle of yellow fever." According to Hirsch, the range of the distribution of this disease over the earth's surface takes one of the lowest places among acute infectious diseases. He says, further, "If we disregard its isolated appearances at different points on the western shores of Europe and its quite recent establishment as a prevalent form of sickness on the Atlantic and Pacific coasts of South America, there remain only two among the great regions of the globe to form the seat of yellow fever; on the one hand, the shores of the Gulf of Mexico, including the West Indies and part of the Atlantic coast of the United States, and, on the other hand, a part of the west coast of Africa."

The earliest history of yellow fever is enveloped in obscurity. It seems to have originated either on certain islands of the West Indies or on vessels sailing from those points to certain points on the Atlantic and Pacific coasts. The area over which it has spread in times past is certainly circumscribed. That the germ, if one exists, has not been demonstrated has been clearly shown by Sternberg. There is no doubt but what it is the natural offspring of regions and places characterized by the presence of putrefying organic matter under a high temperature. The persistence of yellow fever aboard ship necessarily involves the question as to its direct cause, but whatever difference of opinion may exist as to the nature of the virus of yellow fever, there can be no question as to the conditions of its existence. Decomposition of organic matter under certain climatic conditions is an essential requisite. It was formerly believed that yellow fever could only occur during certain months of the year, from April to November. It is now, however, known that it may occur during any month of the year within the area called the "yellow fever zone."

The first trustworthy account of an epidemic of yellow fever dates from the year 1635, when it prevailed on the Island of Gaudeloupe. The adjoining islands, Dominica, Martinique, and

Barbadoes, were invaded a number of times in the fifty years following. Since then it has occurred on the Mexican coast and the West India Islands, and on the west coast of Africa. During and since the eighteenth century, yellow fever has also frequently extended up the eastern coast of North America, the highest points reached being Halifax and Quebec. It appeared in the United States in Boston in 1693; in Philadelphia in 1699; in New York in 1702; in New Haven, Conn, in 1742; in Norfolk in 1747; and first made its appearance in New Orleans, where the greater epidemics have existed, in 1796. It has never gained a permanent foothold in the United States, having always been brought from its source in the West India islands or in that locality. It is impossible to give a detailed account of all the greater epidemics from this disease. The places in the United States in which they have occurred are numerous, including Boston, New York, New Orleans, Philadelphia, Charleston, Mobile, Pensacola, Norfolk, and Baltimore. The more important epidemics occurred as follows: In 1783 in Philadelphia with 4040 deaths, said to have equalled 10 per cent. of the population; in 1797 in Philadelphia with 1300 deaths; in 1798 in Philadelphia, and other places (including New York), with 5700 deaths. In 1853 the States of Florida, Alabama, Louisiana, Mississippi, Arkansas, and Texas were invaded. The deaths in New Orleans, during this epidemic, are reported to have been 7970. In 1867 it invaded Texas and Louisiana; deaths in New Orleans 3093; in Galveston, Texas, 1150. In 1873 the States of Florida, Alabama, Mississippi, Louisiana, and Texas suffered severely, and in 1878 the most extended epidemic in the United States occurred, according to Sternberg, invading 133 towns, chiefly in Louisiana, Tennessee, Alabama, and Mississippi, where there were 74,000 persons attacked, with 15,934 deaths.

It has been frequently transported to European points from its source, but has not spread extensively at those points. The fatality has varied very much in different epidemics. It is more fatal to persons who are unacclimatized than to others. Among unacclimatized adults the fatality ranges from 20 to 60 or even 80 per cent. No race is entirely exempt, but there is no doubt that negroes are decidedly less susceptible than the white race. They are less liable both to attack and to death in the event of attack. Both the attacks and deaths are more numerous among males than females. This is, no doubt, largely owing to the greater

exposure of males, and to their habits, especially over-indulgence in alcohol.

In regard to the manner of transmission or mode of dissemination there is strong ground for the belief that it is a microbic disease, although not yet demonstrated. It cannot survive cold weather, and the first one or two frosts destroys its vitality. Under certain conditions, however, it can be carried in merchandise, vessels, and especially where there is a lack of cleanliness. It is believed to be easily conveyed in old vessels that are undergoing decay. Just how this disease enters the human body is not yet known. It is certainly infectious, and the poison is claimed to be as specific as atropia or hydrocyanic acid. It can be transported from place to place in the ordinary vehicles of travel and traffic, and in the bodies or baggage of men and women. It seems to take root, however, in the locality, in the soil as it were, and to be contracted from the environment of the patient rather than from the patient himself; the locality seems to remain infected after the patient has been removed, for weeks and even months. There is a very important circumstance connected with the transmission of this disease which, I believe, should receive very careful attention from all members of the medical profession. It is a condition which exists as a warning in other diseases, as has been referred to under the head of cholera. It was first mentioned, so far as I know, in the surgeon-general's report of the Navy Department for 1873-74, by Dr. Joseph Wilson, medical director of the United States Navy, under the head of "An Interesting Epidemic." He says, "There is a variety of yellow-fever poisoning which seems not to be generally understood; at any rate, not generally insisted on. I allude to the numerous cases of light febrile disease which precede the development of the fully-formed fatal cases of yellow fever, usually noticed in the first cases of an epidemic. Every writer on epidemic cholera tells us of the numerous cases of diarrhœa preceding the epidemic, but no one describes these numerous cases of slight febrile disease, which are the harbingers of the yellow-fever epidemic." He then goes on to show that for some time before an outbreak of yellow fever they had a large number of these febrile conditions—some diagnosed as mild typhoid, some as simple fever, etc.—followed by an epidemic of yellow fever. An interesting feature connected with epidemics of this disease, as well as others, is the commercial relation, and the difficulty that sanitarians have in

impressing upon the people the importance, not only from the stand-point of life-saving, but from a commercial stand-point, of controlling these outbreaks. This has been well illustrated by Dr. Samuel Choppin, of Louisiana, in describing the epidemic of yellow fever that occurred in this country in 1878. It appears that an estimate of the total loss to our country from this epidemic was made by Mr. A. B. Farquhar in a letter to Surgeon-General Woodworth, in which he places the cost at \$175,000,000. In New Orleans alone there were estimated 25,000 cases with 4500 deaths, and the cost to that city, based upon a moderate estimate, was \$12,072,500. It is also shown that the city of New Orleans, by its commercial interests with the tropical ports from which this disease was brought, amount to about \$1,500,000 per year, while the loss in one year by the presence of yellow fever is estimated at over \$12,000,000. Dr. Choppin, referring to the quarantine system, which is impossible to make perfect on account of the commercial interests, very wisely says, "No conditional quarantine can ever be made effective, because, first, of the laxity with which laws are unfortunately executed in this country, and, secondly, because of the cupidity of the commercial men having large interests at stake, who will always move heaven and earth to evade successfully all quarantine laws and regulations." Until people can be educated up to the point of recognizing the importance of these sanitary measures, we can never expect to be able to control epidemics, and they will occur from time to time, for it seems to be a law of nature that people must learn by experience alone.

IV. SMALL-POX.

It hardly seems necessary for me to refer to this subject, because I take it for granted that all present have learned the lesson of experience that I have just quoted. This is another disease, the essence of which is unknown to us, as you all know. We do have, fortunately, a means of prevention, which is not provided for positively in the diseases that I have just mentioned, that of vaccination. It would be impossible, in a few words, to even scan the history of small-pox. The earliest records of its existence are to be found in Hindostan and China very many years before the Christian era. It has invaded all parts of the world from the earliest history, and at times the havoc caused by its ravages has been something appalling. One of the earliest writers was the Arabian, Ahron, who practised in Alexandria in

the time of Emperor Heraclius, 610 A.D., but for what is known of these writings, and others, we are probably indebted to Rhazes, physician to the hospital at Bagdad, who died about 923 or 930 A.D. He was the first to distinguish small-pox from measles. Epidemics from this disease are too numerous to mention. The more severe, perhaps, occurred in Iceland, the records of which are to be found in those of the Danish government; the worst epidemic of all occurred in 1707, among a population of somewhat over 50,000 it carried off 18,000. In Ireland, where the lamp of learning burned all through the Dark Ages, we find that this disease raged to a great extent, and a very interesting chapter might be written concerning this if time allowed. Emerging from the Dark Ages, Vidus Vidius, 1550, incidentally refers to it as attacking all persons in the course of their lives, and Mercurialis, born in 1530, holds that almost every person must have it once. Many others at this time used similar language, and it seemed to be the general impression that every person born into the world was liable to, and most probably would at some time have, small-pox. Sir Gilbert Blane is credited with the statement that "it had destroyed a hundred for every one that had perished by the plague." George Bell, of Edinburgh, in 1802, wrote that small pox was one of the most severe and dangerous diseases to which mankind is subject.

The full power of the disease, however, can only be seen as we learn its ravages in the New World, among unprotected populations. This began in 1507 in the West Indies, where it was so disastrous that whole tribes were exterminated; in Mexico, it is related, it even surpassed the cruelties of conquests, suddenly smiting down 3,500,000 of the population and leaving none to bury them. In Brazil, in 1563, it extirpated whole races of men. At about the same period, in a single province in Quito, it is related, it destroyed upward of 100,000 Indians. In Russia, according to the calculation of Dr. Alexander Creighton, physician to the emperor in 1812, every seventh child died annually of the small pox; and Colon set down the deaths in France as from 60,000 to 72,000 annually. This was before vaccination. The periodicity which existed in the pre-Jennerian times is interesting as showing that an epidemic of the disease caused an immunity among those attacked who were fortunate enough to live, for a certain period of time, and there is a relationship between this thought and vaccination as practised at the present day. This

periodicity differed in different localities. The immunity seemed to be exhausted sooner in some places than in others, and may this not be true in regard to vaccination? Small-pox first made its appearance in the United States in Boston in 1649, and from then to 1792, about one year in twelve, it was epidemic, while in Vienna from 1742 to 1759 it was epidemic about every fourth year. The enormous mortality from the different epidemics in this country are too familiar to you all for me to quote, and the mode of transmission is also well known. The great prophylactic power of vaccination in small-pox has been so thoroughly demonstrated in our present outbreak that it does not seem possible that the opponents of vaccination have a single thread to hang on. For a time being, after the disease exists, with the large amount of vaccination that has been done, small-pox will decline until the immunity is lost by time and the future generation comes up unprotected, then we will have a repetition of the disease. To prevent a prevalence of small-pox is a work difficult to perform, for, as I stated before, the great masses of the people will only learn by experience. We are, however, very much better off than our forefathers in respect to knowledge pertaining to the greater epidemics. We now know some of the potent factors which cause certain diseases that are or may be classed as epidemic. While the people are slow to realize the invaluable scientific discoveries that have been made concerning epidemic diseases within the past two or three decades, the more intelligent portion is beginning to understand more and more their value, and the medical profession may feel encouraged with the progress made.

Relieving Cough.

A sudden and wearing attack of coughing often needs immediate attention, especially in consumption and those chronically ill. In an emergency, that ever useful remedy, hot water, will often prove very effective. It is much better than the ordinary cough mixtures, which disorder the digestion and spoil the appetite. Water almost boiling should be sipped when the paroxysms come on. A cough resulting from irritation is relieved by hot water through the promotion of secretion, which moistens the irritated surfaces. Hot water also promotes expectoration, and so relieves the dry cough.—*The Health Magazine.*

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An Object Lesson in Longevity.

READERS of the ANNALS OF HYGIENE are not unfamiliar with the name and fame of William Reynold Salmon, M.R.C.S., of Penllyn Court, Cowbridge, Glamorganshire, South Wales, who completed his 106th year on March 16, and died on May 11, at the time of his death the oldest known individual of indisputably authenticated age, the oldest physician, the oldest member of the Royal College of Surgeons, England, and the oldest Freemason in the world. His age does not rest upon tradition or repute. He was the son of a successful and esteemed practising physician of Market Wickham, Suffolk, England, and there is in the possession of his two surviving relatives, who cared for his household for many years, his mother's diary, in which is inscribed in the handwriting of a lady of the eighteenth century, under the date, Tuesday, March 16, 1790, a prayer of thankfulness to God that she had passed her "tryall," and that a son was born, who she hoped "would prosper, be a support to his parents, and make virtue his chief pursuit." The Royal College of Surgeons verified this record many years ago, and it was subsequently again authenticated by the authorities of the Freemasons, who thereupon enshrined his portrait in their gallery as the oldest living Freemason. The Salmon family moved to Cowbridge in 1796, so that the doctor had lived exactly a century in the lovely and poetic Vale of Glamorgan, in the very heart of

which Penllyn Court is situated. Here on his 106th birthday—a man of over middle height, with still long, flowing hair, druidical beard and moustache, and bushy eyebrows—Dr. Salmon was visited by one who writes,—

“Seen a few days ago, the Patriarch of Penllyn Court was hale and hearty. He eats well and sleeps well and was feeling better than he had felt for the last five years. On that day he rose at noon, dined at 6, and retired at 9. Drank two glasses of port with his dinner, but did not smoke. He abandoned his favorite weed at the age of 90, and had to discontinue his drives over his beautiful estate in his 100th year. One day is much the same as another, for he gives his two relatives little trouble in attending upon his wants. Dr. Salmon has not discovered the elixir of life, for the shadows of life’s evening are stealing slowly over him. He cannot move about, his hearing is dulled, and the light is almost shut out from the ‘windows of his soul.’ Let us think of this remarkable man waiting for death uncomplainingly in his old-fashioned mansion, surrounded by the beautiful foliage and the broad expanse of green fields that he loved so much to roam when a younger man, in that sylvan Sleepy Hollow in the Vale of Glamorgan.”

Eight weeks later, he, who in youth had been “the youngest surgeon in the army,” died, the oldest physician in the world.

“At College He was an Athlete.”

IN large type these words form one of the head-lines in the biographical sketch of the late ex-Governor Russell, of Massachusetts; a man who dies suddenly when only 39 years of age; who dies without warning, and who, to all appearances, should have lived for seventy-nine years. Such cases are constantly occurring, but it is not often that the prominence of the victim demands our special attention.

Excess; excess; excess,—will we ever learn what excess means, and will it ever be the fashion to avoid excess.

Vanderbilt stricken down at less than 50; the effect of excess, of excessive wealth; is it not appalling when one reflects upon what might be called the inherent perversity of humanity; the inherent tendency to do that which is not wholesome?

The way of the reformer is not an easy one; he who does not float along in the channel of fashion has a stormy voyage;

yet what else can he do? he who would preach health and long life must preach against many of the mandates of fashion, because they are diametrically opposed to the maintenance of health and the acquisition of longevity.

In this one question of college athletics many serious questions arise. We are perfectly honest and desirous of being fair and impartial when we assert that the authorities of our institutions of education are either wilfully, or ignorantly, reprehensibly responsible for the physical ruination of many young men. No matter what may be the verdict of enthusiastic athletes as to the value of athletics, there can be no question but that, as practised to-day, many are ruined and but few benefited thereby.

To the young, immature, enthusiastic student there is a fascination about college sports and the desire and effort to excel therein not to be wondered at, and not to be easily resisted; but is it just or fair, is it proper that those to whom the youth of our country are intrusted should allow their impulse to ruin their health?

We are not fanatical on this subject; we are scientific; we know that *use* means healthful exercise, while *strain* or *excess* means abuse and damage; we know that college athletics are not *use*, but *excess* or abuse, and we know that the authorities of most of our institutions agree with these views, but tolerate and encourage the abuse of exercise, because such is in accord with the fashion of the day.

Life and Death.

WHAT is Life? What is Death? From time immemorial these two problems have occupied and worried the minds of the thoughtful, and will continue to do so till the end of time, without any satisfactory conclusions as to the intimate cause or nature of either. But a little reflection thereon, directed into the proper channel, will serve a useful purpose, as, from this reflection, we can deduce some practical suggestions calculated to preserve health, and, by so doing, to produce happiness.

“Out of death comes life, and life is the cause of death, yet there is not death” is the seemingly contradictory text that we shall take for our meditation. The world is *full* of organic matter; has been so from the beginning of time, and will continue to be so even unto the end of time; this we must accept as a fact,

because if not *full* a vacuum must exist, or has existed, or will exist in nature, and this, we are taught, is a physical impossibility.

If, then, the world is now, and always has been, *full* of organic matter, everything that has existed, exists, or will exist has consisted, or consists, or will consist of aggregations of organic matter, not new, but that has been present for all time.

If this same organic matter that has existed for all time has constituted all organized bodies, we must infer that it is possessed of an everlasting activity, or vitality, or else we must conclude that it is continually dying and starting again into life. Death, as we understand it, implies a cessation of activity, and a cessation of activity would mean an interference with the integration and disintegration of organic matter that has been, and is, and forever will be taking place; hence from this point of view there is no such thing as death; there is no such thing as death or cessation of activity of organic matter; either this idea is correct, or we must assume that organic matter has the power of losing and regaining activity, an assumption not in accord with our accurate knowledge of physical phenomena.

A leaf dies, as we say, but the organic matter of which this leaf is composed does not lose its activity; the form of activity, familiar to us as life, has changed into another form of activity, known to us as death; but organic activity is present all the time. The living human body is integrating and disintegrating all the time; when this body dies, as we call it, integration ceases, but disintegration continues; there is just as much activity in the organic matter of the dead as of the living body; and the matter of this body disintegrating as a human body integrates again as some other organic combination.

So from the beginning of time organic matter has been forming itself into trees and fruits and flowers; into tigers and bears and men and women, acting under the guidance of definite but inscrutable laws; resting for a time in certain apparently definite and stable combinations, it breaks up again to form different combinations, and so on ceaselessly it has been and is doing and will continue to do. If, then, we look upon organic matter in this light, it will help us to an understanding and appreciation of the laws of hygiene.

The elements of organic matter are immortal, because they never lose activity; out of the disintegration of one organic

compound a new compound is formed ; the functional activity of an organic compound causes its disintegration ; hence we have explained the apparent paradox which we asserted in the beginning of this editorial.

To our way of thinking, organic matter is always in a state of activity, the nature of this activity varying from time to time under the influence of circumstances and surroundings. Some activities are essential for human life ; some destructive thereof ; hygiene teaches us how to conserve to the utmost possible limit the activity essential for the perpetuation of the organic compound which each one recognizes as his own body.

Water in Fever.

TWENTY years ago we knew everything, in our own estimation ; each year we know less, and grow more willing to learn.

Just at the present moment we are anxious, if possible, to learn why some doctors, and many persons, decry the free use, internally, of water in fever.

If a house is on fire we deluge it with water ; why not do the same when the human body is on fire ? Fever and fire are much the same ; they both result from combustion, from the union of carbon and oxygen ; if water is inimical to flame, why is it not detrimental to fever ?

Some physicians do advocate the external use of water to reduce fever, the cold bath or wet pack, but deny its internal use ; is there any rational justification for this denial ? We do not say that there is not ; we are seeking information and invite discussion of the subject.

Royal Sandwiches.

Theodore Hook was a great wit, and very ready. He was asked to write something about the death of the king and queen of the Sandwich Islands. His production read as follows :

“ ‘ Waiter, two sandwiches,’ cried Death,
And their wild majesties resigned their breath.”



A New Kind of Sandwich.

Have you eaten of the very latest dish? I say latest in every sense of the word, for it's a dish that goes with the midnight Welsh rarebit, and is the newest and best sort of a sandwich. You take fresh bread and perfect butter. Then you have some fresh roasted peanuts—it's the fad to roast them yourself—ground fine in a coffee-mill. Next you mix the ground-nuts into a paste with a little sherry or old port, spread them on the bread, and there you have the sandwich everybody is eating. You may substitute mayonnaise for sherry, or add a drop of almond essence, but a peanut sandwich you must have if you are to follow the fashion set, they say, by the wife of a cabinet member.—*Washington Post*.

Olive Oil in the Treatment of Bruises.

Instead of having recourse to applications of arnica tincture, camphor spirits, and to strong compression of the swelling in the treatment of light bruises, Dr. G. Auger prefers the use of olive oil, both in children and in adults. He applies the oil freely to the contused parts, and rubs the latter lightly with a rag, absorbent cotton, or with the fingers, and then covers the bruise with a compress saturated with olive oil.

The author claims that this treatment gives immediate relief to the patient, and that the formation of a bloody protuberance is often prevented; while excoriations and superficial wounds which may be present heal very rapidly.—*American Medico-Surgical Bulletin*.

A Case of Somnambulism.

On awaking one morning recently a Dutch farmer of Heerenneen (Drenthe) perceived with astonishment that his wife was no longer in bed beside him. In one corner of the room lay her shoes and in another her clothing, but of the good dame herself not a trace could he find anywhere about the premises. Greatly alarmed, he called in the aid of the police, and all day long there was a most energetic search for the missing housewife, but without

avail. At length, towards evening, a peasant came forward and said that shortly after daybreak he had seen a woman in her night-clothes wandering about near the village of Bonenknype. At the time he was inclined to think it was an apparition, for in the uncertain light the figure had a most unearthly look, but perhaps, after all, he was mistaken. Upon hearing this tale the farmer at once started off in the direction indicated, and finally succeeded in finding his wife at the house of her sister, which is distant three leagues from Heerenneen. The wanderer had arrived there at about seven o'clock in a dazed condition and half dead with cold. She had no recollection of leaving her home, and could give no account whatever of the journey she had undertaken in such extremely light marching order. Before reaching her sister's place she had to cross a score or more of narrow bridges, some of them mere planks, and was likewise obliged to jump several formidable ditches. The fact that under these circumstances she escaped an accident is looked upon by the simple peasantry as wellnigh miraculous, but seem to bear out the general supposition that people in a state of somnambulism are able to perform gymnastic feats which they could not attempt in their waking moments.—*London Lancet*.

Disease in the German Army.

Some very interesting facts were recently brought out in a report to the Reichstag concerning the decline of disease in the German army. From the report it appears that since 1868, when the number of cases of sickness was 149 per 1000, there has been a steady reduction to 867 per 1000 in 1894, or 42 per cent., and the death-rate has gone down from 6.9 per 1000 to 2.4 per 1000, a reduction of 65 per cent., which means a saving of 2200 men each year. This remarkable improvement is due to modern improved hygiene and to the strict enforcement of vaccination during the past thirty years. Small-pox is now exceedingly rare, and has caused only two deaths since 1873. History demonstrates that the most devastating army epidemic is small-pox. In the French army, during the Franco-Prussian war, there were 23,400 deaths from this disease, while in the German army there were only 300 deaths. The campaign of 1870-71 reversed the time-honored rule that disease kills more than the enemy: 26,000 German soldiers fell in battle and 14,000 by disease.

A Wonderful Clock.

One of the most extraordinary mechanical wonders of the world is a clock built by a Russian Pole named Goldfadon. He was at work upon it six years. The clock represents a railway station, with all of its appointments and details carefully carried out. On the central tower is a dial which shows the time at New York, London, Warsaw, and Peking. Every quarter of an hour the station begins to bustle, telegraph operators click their machines, the station-master and his assistants appear, porters bustle about with luggage, and a miniature train dashes out of a tunnel on one side of the platform. All the routine of a railway station is gone through, after which the train disappears into another tunnel, to reappear at the next quarter of an hour.—*Popular Science News*.

A Crying Baby.

An exchange tells of a method resorted to by Indian mothers to keep babies from crying. At the first attempt to cry on the part of the infant the mother places her hand over its mouth and pinches its nose so that it cannot breathe. Naturally it stops crying, and in an instant it is allowed to breathe freely again. This operation, repeated persistently whenever the baby begins a crying spell, soon persuades the child that it is its own act—the effort to cry—which produces the uncomfortable choking fit. It soon decides that the game is not worth the candle and stops its wails.

Now, it is too much to expect the doting American mother will resort to this heroic measure to persuade her infant that crying is superfluous and unnecessary, but will she perhaps see the moral in the proceeding? Herbert Spencer points the same in his essay on education, when he advises parents to follow the methods of nature in their correction of their children. A child touches a hot stove and his finger is burned.

He does it again, and again his finger is burned. Every time he tries it the punishment is ready. Probably the second attempt cures him, and never again while he lives does he voluntarily try the temperature of a piece of heated iron on his exposed skin. It is not the violent spasmodic punishment that means correction of a child's faults. Retribution may be small and comparatively insignificant if it is absolutely sure to follow transgression.

It is the persistent, relentless, and not-to-be-escaped-from character of the consequences of his misdemeanor that impresses the childish mind and finally convinces him. All of which is with apologies to Mr. Spencer, who has said it infinitely better in his essay, to which all mothers who have not read it are earnestly referred.—*Philadelphia Press*.

Nose-Bleed.

A physician who was called to treat an obstinate case of nose-bleed which had defied the skill of several other medical men, tried that much-used remedy, hot water, with good effect. He gave a foot-bath with water almost unbearably hot. The patient's feet were put in the water, which was at 110° F., and then as she became accustomed to it he added boiling water, and in a few minutes the bleeding, which had continued for several hours, diminished and finally ceased, her heart beat more firmly, and she was out of danger. In another case this physician used the same remedy in a persistent case of vomiting. This is simple treatment and is well worth trying. The hot water is much better borne when the feet are put into it at a temperature not too high, and boiling water is gradually added. It is astonishing how much heat can be borne in this way.

Neckties as Barometers.

A fabric that changes color under varying conditions of the weather has just been produced.

No practical use of the invention has yet been made, except a few sample neckties which the inventor has distributed among his friends. The fabric of which the neckties are made resembles a coarse linen. When the weather is warm and fair the color is a dark blue. In cold weather it changes to purple. The approach of rain is heralded by pink, and snow causes the necktie to become a startling green.

The invention marks a new era in fashions. Shirts, trousers, gowns, and other articles of dress can be made of the material. The invention is yet in its infancy. When it has been developed to a greater extent the woman of fashion can array herself in a blue gown in the morning. By noon it will turn to a mauve.

The afternoon will find it pink, and the evening some other color. As a labor-saving institution the new cloth is exceedingly valuable. Thermometers and barometers will go out of fashion. The "city man" as he puts on his shirt in the morning has but to glance at the color. If it is purple, he wears his heavy overcoat. If it is pink, he takes his umbrella under his arm. When sails are made of chameleon cloth the yachtsman has but to glance at his mainsail to know what kind of weather is coming.

Food for Convalescents.

Poached eggs may be given to convalescents. In poaching an egg separate the yolk from the white. Boil the white first by slipping it onto the water, and as soon as it begins to coagulate drop the yolk onto the white. Poached eggs are very pretty and digestible, and when perfectly prepared are very palatable. The white is not palatable when almost raw, and, as said before, though the yolk is not so bad when but partially cooked, it should have the proper consistency, and be rightly prepared for the sick. Eggs should be served poached or boiled ; in no other form.

Broiled beef pulp might be mentioned next. I do not mean Hamburg steak, but simply the pulp of beef broiled. It is very pleasant to the taste and is prepared in this way : Take a pound of raw beef from the round, and with a sharp knife scrape across the grain until the pulp is scraped from the fibres ; make it into small cakes and broil it over a hot fire. When thinly spread on delicate slices of bread it is very palatable.

Chicken, game, steaks, and chops may be given convalescents. There is but one way of broiling steak for the sick, and that is the English way. Three chops are broiled, placed as an under, upper, and middle slice, and the middle one only is given to the patient.

There are very few patients who cannot be given ice cream. People who are ill crave such things, and very often their cravings are a proper guide. I know a case in which ice cream saved a patient's life. Ice cream can be taken before anything else to a patient in a hospital. Rice may be given, but never unless it is properly cooked. Never give any one who is sick anything fried. Never try a beefsteak. Fried potatoes, it is perhaps needless to say, should never be given to a sick person. Very

often an invalid desires things that seem absurd, but they only seem absurd because we cannot put ourselves in the place of the patient. We have our ideas of how they should feel, and not their ideas of how they do feel. Sometimes their desires may be just what the system needs.

Above all things serve the food daintily and prettily to a patient. His appetite is greatly influenced by the appearance and manner in which the food is served, and nothing can be too good for our sick.—*Practical Medicine*.

Normal Noses.

A man recently consulted us for the purpose of having a spur removed from his septum. Some weeks ago he was in a physician's office with a friend who was having nasal treatment. From curiosity he asked the doctor to examine his nose. The doctor did so, making a pencil sketch to illustrate the presence of a large spur on the left side. Its prompt removal was strongly urged. The patient informed us he never had the slightest trouble with his nose, and yet the presence of this outgrowth was worrying him to such an extent that he could not sleep. We refused to remove it, although we were assured that some one would be asked to perform the operation. A London writer says that an examination of over 2000 dry skulls showed that more than 75 per cent. had deflections or irregularities of the septum. To correct a deformed septum which does not cause trouble is about as wise as to extract a perfectly sound tooth which has never caused a particle of pain.—*National Medical Review*.

How to Succeed in Life.

Quite as important to success in life as continued activity is the seizing of your opportunities when they come to you. Many men have expressed this idea in many ways. Here are a few such expressions which have been gathered together :

"The truest wisdom is a resolute determination," said Napoleon once, and his career was an exemplification of his words.

The great violinist, Geradini, being asked how long it took him to learn to play, replied, "Twelve hours a day for twenty years."

This is virtually the key-note to the success of many eminent men in all lines. Edison, the electrical inventor, expressed this idea with regard to himself when he said,—

“Anything I have begun is always on my mind, and I am never easy until it is finished.”

Darwin, the great scientist, whose theory of evolution has wrought a greater change in the views of thinking men than any other theory that has been broached in modern times, owed much to persistence. He was almost always ill.

“For forty years,” said his son, “he never knew one day of health.” Yet during these four decades he used to force himself unremittingly to pursue the work which he had set out to do.

Many a man with the strongest constitution would have shrunk from the enormous toil performed by Darwin, but he stuck to it with a patience that was marvellous.

Drive out Dust and be Healthy.

“Speaking of household hygiene,” said an earnest young mother the other day, “the more interested I become in that question, and the more deeply I look into it the more I am constrained to believe that an amazingly small percentage of housewives, even in this enlightened age, have the faintest knowledge of it, and that they consequently fail altogether to practise what I call the most beautiful of all the arts known to women. I know there’s a vague idea among reading people that the modern housewife is thoroughly up in her domestic science book, but if you will put your head out of the bedroom window of any city house, or country house, either, for that matter, these spring mornings, you’ll see a total absence in nine out of every ten of those abodes of the practice of the first principle of household hygiene, which consists in having the bedroom windows wide open, pulling every piece of bedding apart separately, and placing it in a position where the air may pass over it freely and carry off the odors that have collected in the night.

“Then, too, one must never turn the mattress at first, for that imprisons the foul air and retains it indefinitely, but it should always be dislodged from its regular place on the spring and brought a little nearer the windows if possible.

“The pillows should be placed in a good position to get the air, and they are better stripped than covered, but this is the one

element of bedroom hygiene that the old-fashioned house-keeper seems to understand. She knows that the feathers in the pillows 'die,'—that is, they become hard and packed, if not constantly exposed to the air. I have seen some women try to effect a compromise in the matter of airing their bedrooms by hanging the blankets double against something, but a measure as half-hearted as this is of little use. Bedclothing, to be aired properly, must be spread out singly, and the oftener it goes out on the clothes-line the better for the health and comfort of the sleeper.

“‘Makes such a lot of extra daily work,’ you say? Of course it does, but what doesn't make work that results in any sort of good achievement? Nothing in the domestic world, at least. The lavish spreading out of bedclothing makes a great deal of sweeping necessary because it dislodges every particle of dust. Bedrooms kept in the old way need very little care, because, as the bedding is never removed and the air never admitted, the dust stays where it collects and where it can do the most harm.

“The enthusiastic household hygienic student knows that she must sweep her wall thoroughly once a week with a soft brush or a clean cloth pinned securely over a broom. She knows that she must not let thick dust collect on the backs of furniture, nor on the ledges over the doors and windows, because the inmates of the room are constantly taking these particles into their lungs. She knows that lightly laid bedroom carpets are a menace to the family health, and that all bedroom floors should be thoroughly washed at least once a week. If the floors are covered with matting they should be washed in salt water, but the painted floor, with small, loose rugs, easily shaken and purified, is most desirable. Wire bed-springs should be well dusted weekly with a clean cloth, and where the under-side of the bed is of wood it should be washed frequently with ammonia water, the crevices requiring special attention and frequent drenching with insect-poison. Once a year, at least, every quilt and blanket should be thoroughly washed and dried in the sunshine.”—*New York Herald*.

The Reform in Sleeping Methods.

The rampant reformer of the day has now invaded bedrooms. The orthodox fashion in making up the beds so as to gently slope towards the feet, and having a good-sized pillow or two

under the head, is all wrong. A prominent French doctor, M. Villhelm Fischer, is responsible for this statement. He asserts that after a long series of experiments he has proved conclusively that to sleep in a bed prepared in the old-fashioned way is simply to induce ailments of all kinds. He advocates a complete reversal of things. You must have your head on a level with or lower than your feet. If pillows are to be used, they must be under your feet instead of under the head. The results, he claims, will be amazing, being a sure cure for insomnia, as well as a preventive for the nightmare. Dr. Fischer says further that sleep in this new position "will always be intellectual, because more profound, the entire nervous system ameliorated, while people inclined to lung and kidney trouble will be vastly benefited by sleeping in this position." To prevent any inconvenience by too sudden a change the pillow should be gradually reduced and finally placed under the feet.—*Science News*.

Milk as an Agency in the Conveyance of Disease.

Dr. Rowland Godfrey Freeman contributes an elaborate statistical article of ten pages on this subject to the *Medical Record*, March 28, and concludes with the following recommendations:

(1) Whenever a case of communicable infectious disease is reported, inquiry into the source of the milk-supply should be made.

(2) Milk traffic should be separated from houses where people live. The dairy building should be at least one hundred feet from either the house, barn, or privy, and should be on a higher level than any of these, and should have a pure water-supply of its own. At this dairy building all the dairy work should be done, including the cleansing of pails and cans.

(3) It should be unlawful for any one who has come in contact with a sick person (when this sickness is not positively known to be non-contagious) to enter the dairy building or barn or to handle the milk.

(4) All men connected with the milk traffic should be compelled to notify the authorities on the outbreak of any disease in their respective abodes, and to abstain from their work until permission to resume is given them by the authorities notified.

(5) Cities should accept milk only from dairies which are regularly inspected and where all the cows have been tested with

tuberculin and those giving the characteristic reaction have been killed and the premises disinfected.

(6) The tuberculin test should be applied to all cattle and those which react should be killed, the owner being reimbursed from State funds. The premises on which such tuberculous cattle have been kept should be thoroughly disinfected. All cattle which are brought into the State should be quarantined until the tuberculin test has been applied.

(7) The use of one long trough for the purpose of feeding many cattle should be avoided, since it is a ready means for the conveyance of pathogenic germs from one animal to another.

From the excellent regulations of the New York City Board of Health for the sale and care of milk I take the following important rule: "Milk shall not be kept for sale or stored in any room used for sleeping or domestic purposes or opening into the same."

Undoubtedly the adoption of the above regulations would do much in reducing the amount of sickness due to the conveyance of pathogenic organisms by milk. It does not seem probable, however, that any regulations can entirely eliminate this danger.

I would, therefore, add one word of caution for physicians who order milk diet. Use some sufficient sterilizing process, so that in case the milk supplied contains pathogenic organisms, they may be destroyed before the milk is used by the patient.

Cats and Destiny.

In the Tyrol girls who are fond of cats marry early.

If it rains on a Dutch girl's wedding-day it is because the bride has forgotten to feed her cat.

If it rains when there is a large washing on the line in Germany it is a sure sign that the house mother has ill-treated the cat.

Throwing a cat overboard from a ship will cause a cyclone.

A person who despises cats will be carried to his grave in a howling storm.

If the family cat lies with its back to the fire there will be a squall.

If a cat washes herself calmly and smoothly the weather will be fair.

Bad luck will follow if a black cat crosses your path, for the

devil prowls about, especially at night, in the guise of a black cat.

To dream of a black cat at Christmas time in Germany is an omen of alarming illness.

The Pennsylvania Dutch believe black cats cure epilepsy.

Three drops of a black cat's blood is said to be a cure for croup.

In Scotland they used to cure erysipelas by cutting off half a cat's ear and letting the blood from the wound drop on the diseased part.

In moving in Scotland the family cat is thrown into the new house before the family enters, in order that it may absorb any disease or curse left by former tenants.

In Ireland the cat must not be taken to the new house by a moving family, especially if water has to be crossed.

A cat born in May will be of a melancholy disposition, given to catching snakes and bringing them into the house.

If a cat sneezes three times the whole family will soon suffer from influenza.

In Thibet any person who kills a cat accidentally, or otherwise, will have the sins of the cat transferred to him.—*New York World*.

Is Early Rising Desirable?

Is it best to see the day dawn? Really the old principles are disappearing. We believed, ever since the school of Salerno, that in order to be well it was necessary to rise early and go to bed early, and now a savant wants to prove to us that we are in the most dangerous of errors, and that health is the apanage of those who get up late.

It is true the promulgator of this new doctrine brings no facts in support of it. He affirms as in the days of "*Magister dixit*."

We think that so fantastic an affirmation should be refuted before it has made any headway, and for that two arguments suffice.

The first is the result of observation. We have only to compare the faces of those who turn night into day with those of active people who get up at reasonable hours, and we shall see on which side health and strength lie. Just question people who have passed the normal limit of life, as was done yesterday, when we cross-examined thirty old men of from eighty to ninety-two

years of age in a *maison de retraite*. You will find that three-fourths of them have contracted from childhood the habit of early rising.

The second argument is drawn from physiology. Any one who needs to sleep in the morning when he went to bed at a reasonable hour is already an invalid. He is a person who easily exhausts his reserves and has difficulty in recuperating them.

Let us not insist further, but continue to rise early when we have energy enough to do so.—*New York Herald*.

The Profits of Beer.

It is reported in London that the brewery business of Barclay & Perkins will be taken by a company with a capital of \$30,000,000, which is about double the present capital. This fact is interesting not only as indicating the profits of brewing beer, but as showing the growth of a successful London establishment during the last century. About one hundred years ago the brewery was owned by Mr. Thrale, whose wife was the friend of Dr. Sam Johnson, and who cut an eccentric figure in fashionable and literary circles in London for a long period after Dr. Johnson's death. The trustees of Mr. Thrale's will sold the brewery for \$650,000, and it is believed that Dr. Johnson opposed the sale of a property which, in his ponderous phrase, had "the potentiality of wealth beyond the dreams of avarice," and which Mrs. Thrale said earned in good years \$75,000 to \$80,000.

Painting the Bath-Tub.

The bath-tub will be less trouble to keep clean if it is painted with enamel paint. This may be purchased already mixed, and the least skilful woman will be able to apply it satisfactorily.

The tub should, of course, be kept perfectly dry until after the last coat of paint has been applied. The walls of the bath-room back of the tub and washbowl, if they are not tiled or of marble, should be "papered" with linoleum in tile patterns. This will permit unlimited splashing of water without damage. The floor may well be covered with the same material.

If the bath-room has not been equipped with wire, soap, and sponge-trays, shelves for bottles, hooks for clothes, racks for towels, and the like, there is no time like the days of spring house-cleaning in which to repair the omission.

Bi-Products of Modern Abattoirs.

If only the edible portions of slaughtered animals could be utilized, meat would be a luxury and at a high figure, since only about one-third of the weight of the animal consists of products that can be eaten. The utilization of the waste products of large abattoirs, as in Chicago, where no less than 9000 steers, 1000 calves, 15,000 hogs, and 6000 sheep have been received in a single day, becomes a matter of considerable importance. The market value of the bi-products represents an enormous sum, and the concentration of the industry permits the utilization of small products that a butcher would allow to go to waste. In the process of slaughtering, the ox is killed by the blow of a hammer on the head. The jugular vein and carotid artery are cut, permitting the escape of the blood, which is collected. When cold it coagulates. The fluid portion, containing soluble salts, is liberated. It is employed for sizing paper. The best qualities of blood are used in refining sugar. The sugar contains many impurities. When dissolved in a solution of water and pure ox blood and heated, the albumen of the blood rises in a scum, and carries the impurities in suspension. The sugar is afterwards filtered through cotton and then bone-black. The latter is also a product of the abattoir, being made from calcined bones. Inferior qualities of blood are used for many purposes, as in the manufacture of buttons, which are hard to distinguish from hard rubber ones. The poorest quality of blood, mixed with other bi-products, is used as a fertilizer. The skin is converted into leather. The portions of the stomach, intestines, etc., are separated into the parts that go into the drying-room, the portion that enters into the composition of fertilizers and also that which is to be converted into oil and then into margarine and butterine. Residue particles of meat and fat are collected and sold to manufacturers of axle-grease, soap, and candles. The bladder is cleaned, inflated, tied, dried, and sold to manufacturers of mastic, snuff, etc. As the bladder is impermeable, no evaporation occurs, hence its use also by the perfumer and druggist for covering the corks of bottles. The guts, which are treated in a similar manner, are glued together end to end and used in breweries for lining pipes, so as to prevent the beer from coming in contact with the metal. The intestines are also prepared for gold-beaters' use, in which alternate layers of the skin and gold leaf are beaten to about one-ten-millionth of a millimetre. This delicate mem-

brane, formed from the external membrane of the large intestines of the ox, is of particular value. It is used in surgery for closing wounds and for making plasters. Glue is made from the coarser, and gelatine from the finer parts of such bi products as parings of skins, the ear, a portion of the tail, the feet, the muzzle, the bones of the skull and jaws and the interior of the horns. The hair from the interior of the ears is very fine and used in making cheap "camel's"-hair brushes. The feet, freed from the horn, serves for the manufacture of an oil used to dress leather. The horns can be heated, welded, split, colored, moulded, etc., and imitate many well-known objects. The hair removed in making glue is burned in a closed vessel and serves for the manufacture of ammonia, used extensively in refrigerating machines. Even the undigested food in the stomach, hay and Indian corn, is compressed and dried, and forms a food known as "Texas nut." The young calves furnish the rennet used in cheese, etc. The bile (ox gall) is used for cleaning, and in painting and binding. Large quantities of excellent fertilizing material are produced from miscellaneous offal. The same bi-products come from the hog as from the ox, with pepsin and bristles in addition.—*Scientific American*.

Forbidden Food of All Nations.

From the days of Adam and Eve to the present time there has been not only forbidden fruit, but forbidden meats and vegetables. For one reason or another people have resolutely refused to eat any and all kinds of flesh, fish, fowl, fruits and plants. Thus, the apple, the pear, the strawberry, the quince, the bean, the onion, the leek, the asparagus, the woodpecker, the pigeon, the goose, the deer, the bear, the turtle and the eel,—these, to name only a few eatables, have been avoided as if unwholesome or positively injurious to health and digestion. As we all know, the Jews have long had a hereditary antipathy to pork. On the other hand, swine's flesh was highly esteemed by the ancient Greeks and Romans. This fact is revealed by the many references to pig as a dainty bit of food. At the great festival held annually in honor of Demeter, roast pig was the *pièce de resistance* in the bill of fare, because the pig was the sacred animal of Demeter. Aristophanes, in "The Frogs," makes one of the characters hint that some of the others "smell of roast pig." These

people undoubtedly had been at the festival (known as the Themophoria), and had eaten freely of roast pig. Those who took part in another Greek mystery or festival (known as the Elusinia), abstained from certain food, and, above all, from beans.

Again, as we all know, mice are esteemed in China and in some parts of India. But the ancient Egyptians, Greeks, and Jews abhorred mice and would not touch mouse meat. Rats and field mice were sacred in old Egypt, and were not to be eaten on this account. So, too, in some parts of Greece, the mouse was the sacred animal of Apollo, and mice were fed in his temples. The chosen people were forbidden to eat "the weasel, and the mouse, and the tortoise after his kind." These came under the designation of unclean animals, which were to be avoided. But people have abstained from eating kinds of flesh which could not be called unclean. For example, the people of Thebes, as Herodotus tells us, abstained from sheep. What is the matter with mutton chops? Then, the ancients used to abstain from certain vegetables. Indeed, the Romans sneered at those Egyptians who did not dare to eat onions, leeks, or garlic. And yet the Romans themselves were superstitious about what they ate or what they should avoid eating.

In his "Roman Questions," Plutarch asks, "Why do the Latins abstain strictly from the flesh of the woodpecker?" In order to answer Plutarch's question correctly, it is necessary to have some idea of the peculiar custom and belief called "totemism." There is a stage of society in which people claim descent from and kinship with beasts, birds, vegetables, and other objects. This object, which is a "totem," or family mark, they religiously abstain from eating. The members of the tribe are divided into clans or stocks, each of which takes the name of some animal, plant, or object, as the bear, the buffalo, the woodpecker, the asparagus, and so forth. No member of the bear family would dare to eat bear meat, but he has no objection to eating buffalo steak. Even the marriage law is based on this belief, and no man whose family name is Wolf may marry a woman whose family name is also Wolf. In a general way it may be said that almost all our food prohibitions spring from the extraordinary custom generally called totemism. Mr. Swan, who was a missionary for many years in the Congo Free State, thus describes the custom: If I were to ask the Yeke people why they do not eat zebra flesh, they would reply, *chijila*,—*i.e.*, "It

is a thing to which we have an antipathy," or, better, "It is one of the things which our fathers taught us not to eat." So it seems the word "bashilang" means "the people who have an antipathy to the leopard;" the "bashilamba," those "who have an antipathy to the dog," and the "bashilanlanzefu," "those who have an antipathy to the elephant." In other words, the members of these stocks refuse to eat the totems from which they take their names.

The survival of antipathy to certain foods was found among people as highly civilized as the Egyptians, the Greeks, and the Romans. Quite a list of animals whose flesh was forbidden might be drawn up. For example, in old Egypt the sheep could not be eaten in Thebes, nor the goat in Mendes, nor the cat in Bubastis, nor the crocodile at Ombos, nor the rat, which was sacred to Ra, the sun god. However, the people of one place had no scruples about eating the forbidden food of another place, and this often led to religious disputes and bad blood. Among the vegetables tabooed as food by the Egyptians may be mentioned the onion, the garlic, and the leek. Lucian says that the inhabitants of Pelusium adored the onion. According to Pliny, the Egyptians used to swear by the leek and the onion. Juvenal pokes fun at those who thought it a sin to eat them. He exclaims, "Surely a very religious nation and a blessed peace, where every garden is overrun with gods!" The survivals of totemism among the ancient Greeks are very interesting. Families named after animals and plants were not uncommon.—*New York Post*.

Ages of the Popes.

Leo XIII. was eighty-six years old on March 2, and is in fairly good health. Sixty years ago his physical condition was weak, and the curious prophecy was made regarding him that if he did not die before he was thirty he would live till he was sixty, and that if he did not die then he might live to be a centenarian.

Among the 257 successors of St. Peter there was one centenarian and at least four nonagenarians. Nineteen or twenty of the Pontiffs lived to be eighty and about fifty died between the ages of sixty-five and seventy-nine.

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COMMUNICATIONS.

The Mission of the Bicycle.

BY M. BELLE LINKMYER, M.D.,

Superintendent of Health for the Ohio W. C. T. U.



THE bicycle craze is on and we are treated to rare and racy exhibitions and fantastic doings among men and women, especially women.

We see women so exhilarated, renewed, and intoxicated by this new fad as to do things bordering on the verge of rashness and foolishness; even in their sleeping hours they dream dreams of flying through the air past sylvan glades, through bosky shades, and on and on through town, village, city, and country in kaleidoscopic change. They get to thinking that not only the sidewalks, but old earth itself is their very own. Some of them—the women, I mean—risk life and limb to outdo their male comrades, and, for their pains, get their heads broken. Young women have forgotten their little crazes over silk and wool and linen and go off on afternoon excursions with Tom and George and Charlie, and demure, precise old ladies fold their hands in despair and moan, “Where are our girls coming to?” And a few ladies of an uncertain age, when they see certain other ladies of uncertain age flying by with rosy cheeks and, as it were, renewed youth, talking like girls of 16 with their male companions of 16, or thereabouts, think it is awful that women should lose their dignity.

Poor men! Some of them look on in a jocular mood as they see flying by these undignified beings donned with their own

clothes,—cap, necktie, shirt, pants, and all. I should say there are a few exceptions,—modest, astute ladies, but far more dangerous withal ; for that short skirt covers up a pair of pants of the same wholesome and stout material. This is only to let you down easy. Remember, oh, men, the sins of your grand-sires of a century ago ! how with an unparalleled vanity they wore woman's furbelows, her ruffles and tucks, her curls and powder. Truly, the sins of the fathers are visited on the children. Checkmate.

Don't be too hard on us. You know the slave was a very tame thing when under bondage, but once when he got a faint whiff of freedom's air he was a new being. This is the first time these spinsters of the bike ever knew what a delightful thing it is to breathe like you fellows, and it is no wonder they are just a leetle bit crazy at times. I always wondered why it was man went wild and crazy-like at political conventions, but, I think, I have solved the problem.

The Lord gave us all things to breathe with,—men take Him at His word and use them to the remotest corner.

We can't say that of women. They prefer whalebone to their own 500 to run their economy, and the consequences are—— Well, they are so fearful and so many I will leave the enumeration of them for a lifetime's thought and work. So we are liable to see all kinds of antics until the modern woman becomes accustomed to the increased influx of the life-giving ether. You say this is a very roseate view of bicycle-riding by women. But while we hold to the point we don't deny the fact that some of the fair ones with more courage than discretion break their hearts, while others break their heads, and still others drop dead from sheer exhaustion. That's nothing ; it is only the old story of the survival of the fittest repeated over again. The world will only have a few less fools and weaklings in it. It is the same old, beaten track that men have trodden and trampled one another down sometimes for a meaner cause. The weaklings go down, but the strong, the brave, the true, and honest-hearted have kept right on with a sure and steady pace.

What signifies the lives and health of a few women, whose lives are for the most part filled with following fads, if the rank and file of our women can be persuaded from sweet experience that this life is indeed a life worth living, abundant in fine possibilities to the woman, who breathes as men do, with every lung-cell doing full duty.

As well declare against the horse because of horse-racing as declare against the bicycle, because a few will not use discretion. Many recreations and amusements are right in themselves, and sensible and decent people must and ought to wrest them from those who, whatever they do, mar the sacredness and rightness of things by their crazing or lewd and vulgar bias.

The time has come when our women, in order that the American race shall occupy the highest pinnacle of physical and, consequently, mental and moral status among nations, shall learn to really enjoy physical health as men do ; with a true, honest, refined womanliness, shall exultingly say, I am healthy, I am strong, I am happy. A woman cannot be a pleasant bike companion of her gentleman friend in the regulation-fashion costume of to-day. As a consequence, Dame Fashion gives out from the white city her propaganda ; it is, the small waist is no more *en règle*.

All ladies to be in *le mode* must have their waists padded to twenty-eight inches.

To breathe right is to think right. Small waist, small brain, and one cannot help but think in a narrow circle if each brain-cell is continually bathed with deoxidized blood, which is the case with persons of weak lung-action. Mark you, on account of the bicycle, the cigar business is waning, and women pay less attention to toggery, fancy-work, and other crazes. This is a craze that we can happily put up with. Perhaps some of our women can be induced to don more healthful attire. Perhaps she can approach nearer in this way to her brother man, and grow to know him on a different basis from that of a lover or a manufacturer of small talk. If so, then, think of the liberty of mind and body it gives ; bicycle clubs with girls and women giving a report of travels by wheel through France and Italy. Such liberty has brought to man his ascendancy in power ; the same cause will bring rich results to women. No problem, now, is more fearful to contemplate than the chasm of life that separates men and women. It is the cause of the deepest misery that humanity has to contend with. These inequalities of temper, mind, and health must be levelled to bring happiness and well-being. The mission of the bicycle is to help in this direction.

A Few Words for "Moderate Drinkers."

BY LAWRENCE IRWELL, M.A., B.C.L.,

Buffalo, N. Y.

IT is not, I think, generally recognized that most so-called "moderate drinkers" are usually ashamed of their "moderate drinking" habits. The following incident is, upon that account, worthy of publication.

Among my acquaintances I number a young lady who incessantly complains of insomnia, for which she seems unwilling to consult a physician. I am informed that pulmonary phthisis appears in her family history; but, as far as I can judge, she does not present the phthisical diathesis. She is a "moderate beer-drinker," having, probably, been recommended to drink beer by some lazy or ignorant medical practitioner, who obtained a license to practise medicine when the laws of New York State were in a shamefully lax condition.

Having heard that this young lady had eaten melon and onions, and washed down this "food" with a glass of beer, shortly before going to bed, I ventured to say to her, in the presence of two or three persons, "I know a young lady, suffering from sleeplessness, who, last evening, after visiting the market in company with a young gentleman, ate melon and onions and drank beer. If she does such things, what right has she to expect to sleep?" Now comes the interesting part of the story. The young gentleman in question, during the day upon which the above remarks were made, accosted me in a perfect fury; he insisted that I was much "too free with my remarks," and threatened physical chastisement if I repeated them. Naturally enough, I was terribly frightened, as might be expected, although the idea of anybody controlling my words, whether spoken or written, struck me as both novel and absurd, since, up to now, my only guiding-star has been the truth. *This irate young man did not deny the truth of what I had said;* and he was, of course, far too angry to listen to me. Now, I ask, as these cases occasionally occur to many of us, what was the boy ashamed of, and what was the young lady annoyed at? Was it the eating of onions and melon at night? Oh, no; it was the beer-drinking.

But there is more to be said. The young man in question presents many of the physical and, I think, all of the mental characteristics of the tuberculous susceptibility; and while I know nothing of his family history, I think it probable that some of his near relatives have died of pulmonary phthisis. In his case the consumption of alcoholic drinks, in any quantity whatever, is positively injurious, as modern physiology has unquestionably proved,—to say nothing of statistics.

Let me urge my readers who take beer or wine regularly every day—or almost every day—to consider the following questions. Can it be right to do anything that one would not like the whole world to know? If we do not wish others to know that we drink alcoholic beverages in quantity, conversationally called moderate, does it not follow that it is wrong to drink them? Everybody must put his or her own construction upon the word “wrong,” as this is not a suitable place for the discussion of ethics. If there is any fallacy in the logic of my questions, I should, indeed, be pleased to learn where it is.

Of course, I did not summon the poor boy at the police court for threatening personal violence. I know very well how often the phthisical diathesis is accompanied by mental disorders, and I make due allowance. But a repetition of his silly vaporings would probably cause me to take some serious step.

I have written these few lines in the hope that the little incident which I have related—trivial enough in itself—may perhaps cause some “moderate drinkers” to reflect for a few moments,—yes, for a few moments.

Baths and Bathing.

BY PROFESSOR DELOS FALL,

Albion, Mich.,

Member of Michigan State Board of Health.



THE man who complacently boasted that “water had not touched his back for forty years” still lives. He enjoys comparatively good health, and apparently is destined to live on to a good old age. He would not, however, be held up as an example of what may be brought about by simply neglecting the bath, but rather he

would at once and by every one be roundly condemned as a product of some dark age and not the result of the teaching of the present. Still it is true that many, all around us, differ only in degree from this man in the estimate which they place upon the value and the necessity of the bath. Only a comparatively few fully appreciate the need of a frequent and thorough cleansing of the entire outer surface of the body. Regular bathing, so far as the people of this country are concerned, is a habit of quite modern adoption.

Consider for a moment the complex apparatus affected by the bath and the enormous amount of work which is carried on when this apparatus is allowed to do its work perfectly. If the reader will examine the palm of his hand carefully with a common pocket lens, he can see the mouths of many "pores," as they are called. They are the openings or mouths of the perspiratory ducts leading from the perspiratory or sweat-glands. These glands, situated as they are on the under side of the true skin, have as their proper function the elimination from the blood of certain impurities and to cast these impurities out of the system. They constitute one of the three important sets of organs of excretion, and aid the lungs and kidneys in carrying on this very important step of the nutritive process.

What organs of the body are more important than these? Does liver or stomach, do the kidneys or lungs stand more vitally connected with our life or welfare than these? We think not. They are found in all parts of the body and in incredible numbers. They are of different sizes, ranging from one-fifteen-hundredth of an inch in diameter on the palm of the hand to one-sixtieth of an inch under the arms. The tubes leading from these glands are about one-seventeenth of an inch in diameter, perfectly straight in the true skin, but, curiously enough, when they enter the rough scarf skin their course is tortuous or spiral. On every square inch of the hand there are at least twenty-five hundred of these perspiratory ducts. They are each about a quarter of an inch in length, and hence it will be seen that the amount of tubing on each square inch is about fifty-two feet. Through this tubing waste matter is flowing constantly day and night. This is for one square inch on the surface of the hand. If, now, we reckon twenty-five feet as the length of these tubes on the average for each square inch of the entire body, and 2500 square inches as the surface of the body of a man of ordinary size, a simple arith-

metical process gives the very remarkable result of an aggregate length of at least twelve and a half miles of sewerage.

What is the material and how much of it passes out of these sewer mouths? We answer that between two and three pounds of waste matter, consisting of water, alkaline salts, and urea, is thus thrown off every day. While the liquid portion of this evaporates, the solid material is left upon the skin, and thus, if the skin is moderately active, forms a layer which may be likened to varnish or sizing.


Such considerations will at least make the reader thoughtful as to the necessity of frequent baths. What the character of the bath should be and how to adapt the time and temperature of the bath to the particulars of the system existing at the time of taking the bath are matters equally important, and should be scientifically understood before they are put into practice.

Heredity as a Social Burden.¹

BY A. W. WILMARTH, M.D.,

First Assistant Physician, Norristown Hospital for the Insane; Late Assistant Superintendent, Pennsylvania Institute for Feeble-Minded Children.

Norristown, Pa.

T may appear a waste of time to place before you proofs of the existence of heredity as a large factor in the production of those nervous diseases on which I wish to speak briefly to-day. My reason for doing so is twofold. The existence of heredity as such a factor has been occasionally denied by men of such position that their opinion must carry weight, even though they are opposed by the majority of the thinking men who have given this matter their attention. The existence of heredity appears thoroughly established by statistics which have been most carefully compiled and verified. Moreover, the great number of these defectives, and the vast, ever-increasing expense of their maintenance, as well as their harmful influence on society at large, can only be realized in this way.

¹ From the Journal of the American Medical Association. Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association held at Atlanta, Ga., May 5 to 8, 1896.

The three forms of disease which are most liable to make their victims dependent on society by rendering self-support impossible, or their society dangerous, are epilepsy, insanity, and imbecility. In dealing with heredity in connection with these three forms of nervous disturbance, it is not reasonable to expect each condition to exactly reproduce its kind. The law of heredity is that each characteristic in the parents *tends* to reproduce itself in the offspring. Characteristics derived from one parent may be overcome by the influence of the other, and may even reappear a generation farther on, or be permanently obliterated. The three above-named conditions are all simply evidence of degenerative changes of the nervous centres, dependent for their form on the portion of the brain attacked, and the age at which they develop. Brain trouble occurring early in life occasions imbecility; later, insanity; while epilepsy may complicate either condition or, rarely, occur independently. Almost any lesion or trophic change in the brain may occasion one or more of these manifestations of disturbed nervous action.

Let us look first at epilepsy as an inherited neurosis. The statistics being more accurate than in the other two diseases, for the reason that its symptoms are unmistakable, and thus friends can neither deceive themselves or others in regard to its existence. Even in uncomplicated epilepsy, if the spasms are at all frequent, the sufferer's power of self-support is lessened, if not entirely destroyed, and he becomes a burden on friends or the general public. Echeverria, after ten years' careful research in tracing the offspring of epileptics, has published the most valuable statistic on this subject that I have yet found. Excluding all cases which could not be fully verified, he found that 62 male and 74 female epileptics begot 553 children whose life histories were as follows; 22 were still-born; 195 died in infancy from spasms; 78 lived as epileptics; 18 lived as idiots; 39 lived as paralytics; 45 lived as hysterical; 6 had chorea; 11 were insane; 7 had strabismus; 27 died young from other causes than nervous disease; 105 were healthy. Excluding the last three divisions we have 414 out of 553 who either died *in utero* or were affected with nervous disease. Could a more convincing story be told? He concludes that the marriage of epileptic women to non-epileptic men is more liable to result in neurotic offspring than when the conditions are reversed. He quotes 1 case when 2 epileptics married, out of 5 offsprings 2 died of infantile con-

vulsions, 1 from hydrocephalus, 1 lived an epileptic, and 1 was said to be bright. Of his 136 original cases 87 had parents with either insanity or epilepsy, while in 46 cases epilepsy had existed through three generations. One woman had epilepsy from puberty to her marriage, which demonstrates that marriage may benefit epileptics, but of 4 children born afterwards, 2 were epileptic and one paralytic. Dr. Knight, of Lakeville, Conn., in an address before the American Conferences of Charities and Correction, quotes a case where an epileptic mother bore 15 children. Eight died in infancy, 2 were fairly teachable imbeciles, 2 were epileptics, and 3 had sufficient intelligence to secure husbands and thus risk the multiplication of their kind. Dr. Landon C. Gray tells of an epileptic woman who bore 9 children, 7 of which died of infantile convulsions.

I studied the records of 500 epileptics at the Elwyn (Pennsylvania) School for the feeble-minded during my residence there as medical officer. Of these, 149 were very incomplete. In the remaining 351 I found neurotic disease in 108 families on the father's side; in 106 on the mother's side; in 22 instances on both sides, or 236 families in all. In 19 other families some neurosis existed in brothers or sisters, but was not acknowledged farther back. From my personal knowledge of some of the families, I am sure that strict truth and the power to see "themselves as others see them" would swell those figures considerably. Insanity, imbecility, and epilepsy with 56, 58, and 71 cases respectively, figure most prominently in this array of epileptic inheritance, chorea, paralysis, etc., forming the remainder.

The heredity of insanity is not so evident, nor is it so certainly transmitted to offspring, especially in neurosis of the same form, as is epilepsy. The reason for this may be looked for in the fact that many cases of insanity are the direct result of excesses, or other causes occurring in adult life. The transmitted effect manifests itself more frequently in childhood or infancy, and epilepsy or imbecility results. Or, possibly we may find that incurable perversion of the moral nature, aptly termed "moral imbecility," which furnishes so much contention as to whether it should be regarded and punished as depravity or treated as a congenital absence of the faculty of moral control. A smaller number reach mature years before coming into their inheritance of misfortune and are classed as insane, and occasionally reproduce the parent malady with singular exactness. Savage, the

eminent English authority, states the matter very concisely as follows: "Heredity produces some insanity, but is more likely to produce either mental defect or special and unusual forms of muscular, sensory, mental, or moral disorder." Nearly every systematic observer admits heredity as an etiologic factor in insanity, and while the most conservative statistics place the average from 20 to 25 per cent. of the cases observed, others place it higher, and Kesteven says, "The most influential of causative conditions is heredity, and it is the most commonly suppressed by the friends." The truth of the last statement at least is indisputable. I wish to particularly emphasize the influence of heredity in imbecility and idiocy for the following reasons. They are the legitimate offspring of nearly every form of neurotic taint. Their extent and baneful influences are not realized by any one who has not given the subject very careful study. The census reports for 1890 and the natural increase would bring their number to between 90,000 and 100,000. This is far below the real number. So slow are parents to publish their children to strangers as feeble-minded that the late Dr. Kerlin, of Elwyn, Pa., investigated the matter. Out of 195 applications for admission to his school in 1880, 178, or 90 per cent., could not be found on the census enumerator's list. How far this may apply throughout the country we can only surmise, but mothers are much the same everywhere, and are not willing to publish their children's defects.

There are two conditions in parents which figure largely in the production of feeble-mindedness in children, tendency to neurotic disease and inebriety. These conditions are associated with the greatest frequency. Dr. Beach, of England, states that drunkenness is found in the ancestry of 38 to 40 per cent. of the parents of idiots (using the term idiot in its broadest sense). The Fourth Conference for the Care of Idiots in Germany agreed that inebriety was the principal cause of idiocy. In this country the Association of Medical Officers engaged in the care of the feeble-minded agreed unanimously that a large per cent. of imbecility is due to the transmitted effects of alcohol, and counselled, as did the German Conference, more stringent legal restriction of its sale. It is well to bear in mind, in regard to these conclusions, that we cannot draw too close a line between the habitual inebriate and the neurotic, for one class merges into the other and makes the distinction between cause and effect a difficult study.

A cloud of witnesses testify to the transmission of neurotic taint in one or more of its many forms, to produce the multitude of imbecile and idiot children whose large aggregate number and marked increase is shown by every census. The largest and most complete studies on this subject have been made by Dr. Barr in this country and Drs. Beach and Shuttleworth in England. The work of these gentlemen is too well known to make any doubt of the great care exercised in the preparation of their tables, or the accuracy of their results, possible.

	Barr.	Beach.	Shuttleworth.
Total cases	1044	1080	1200
	Per Cent.	Per Cent.	Per Cent.
Insanity and imbecility . . .	38.02	22.71	20.08
Other neuroses	21.55	36.85	Incomplete.
Total	59.57	59.56	

If we accept the aggregate totals of Barr and Beach, which are nearly alike, we have nearly 60 per cent. of the families with more than one victim of nervous disease. These figures fairly illustrate the results of other observers. We cannot go much into detailed cases, but I would like to quote Dr. Ireland in illustrating the persistence of this tendency to produce offspring of low grade in some cases. He cites an instance where four illegitimate feeble-minded children were born to one defective woman from four different fathers. In another instance, under my own care, was a little idiot boy with the well-formed but lax and useless muscles in certain regions, which usually accompany the cerebral condition known as microgyria. His mother, a robust, high-grade imbecile with no apparent physical defect, came to see him. She had married again and bore in her arms another idiot child very similar to his half-brother. A local physician assured me that they were certainly the children of different men, the second husband not having come to that region until after the birth of the first child.

Such is the evidence that tendency to nervous degeneration or instability descends from generation to generation, broken or interrupted perhaps by infusion of stronger elements, reappearing a generation further on. What is their number and to what extent do they affect the welfare and progress of the public? Of epileptics, Dr. Knight, who has given their care much study,

estimated that in 1892 there were, in this country, 19,000. They almost invariably drift into imbecility, dementia, or other form of insanity, and are cared for, if cared for at all, under these heads. Some children recover, but adults very rarely. They are ever liable to injury, which prevents their following many forms of employment. They are free to marry if they can find a mate, and there are very few who set out earnestly on that quest and are not very particular, who do not succeed; and they leave as a legacy to the public more epileptics. When subject to attacks of epileptic mania no class of the insane are more dangerously violent.

The number of the insane in the country will hardly number less than 100,000. Probably there are more. It would be difficult to ascertain the total cost of their support. We will look at the approximate cost in the two largest States which, in 1890, contained about one-sixth of the population of the country, which will furnish some guidance to the possible expense in the whole country. In Pennsylvania, in 1894, there were 8616 insane in institutions of all kinds, of which number 6342 were in the six State hospitals and the private hospitals at West Philadelphia and Frankford. These 6342 insane represented an expenditure of nearly \$1,500,000. The care of less than one-eighth of the State's feeble-minded added \$150,000 to this large total. New York spent in 1893, for the care of her insane in public hospitals and for a small proportion of her imbeciles, over \$2,500,000. Carry out this ratio throughout the country and the amount would be startling. The bulk of the insane are in asylums, for public safety demands this. Where are the feeble-minded, who are found in European countries to outnumber the insane, and probably would here if properly enumerated? Not one-tenth are cared for in institutions. The remainder are in almshouses where their proper care is, in many cases, doubtful. Many are in homes where they monopolize their mothers' time and care, and elsewhere, where they are teased by children, abused by the vicious, and live a strange life among their own people, with whom they have little in common. From the highest grades of imbeciles are recruited the ranks of petty criminals, prostitutes, and tramps, who marry early and often, and who reproduce with the frequency of animals. Officers in reformatory institutions are becoming impressed with the idea that the majority of the younger criminals are permanently lacking in the higher mental traits,

without which the development of moral character is difficult if not impossible. The growth of the burden on the industrious of supporting the helpless and the worthless may be better realized when we find that the New York State Board of Charities and Correction expended nearly \$8,500,000 in 1880 and nearly \$16,500,000 in 1890, although the population in that decade increased less than 20 per cent. Do you realize that the tax-payer may support, during a life of ordinary duration, members of three generations of these defectives? The remarkable increase in numbers in a family line of defectives and incapables may be best illustrated by quoting two instances. One, founded on the report of Miss Schuyler, president of the New York Charity Aid Society, of "Margaret the Mother of Criminals," and progenitor of a family of paupers, beggars, prostitutes, and criminals, which finally became a race of 700. Their family vigor was largely preserved by intermarriage with fresh, vigorous families of ruffians, and some of the women bore at least twenty children, among which were numbered insane, epileptic, and imbecile. I would quote briefly from Dr. Barr's exhaustive article on the influence of heredity on idiocy, the record of the family known as the "Tribe of Ishmael," where the descendants of one unclean, neurotic man, traced through many years, "multiplied by consanguineous marriages into 250 families, numbering some 5000 individuals, whose continuous criminal record has poured over the Northwest a flood of imbecility and crime." Nor do these instances stand alone. It is the salvation of society that at a certain stage of nervous retrogression nature appears to check further increase by making the most defective sterile and short lived.

The cost of human life through the insane each year is very large. Professor White, late of Cornell, places the number of homicides in the country last year at over 10,000. How many of these are due to insanity I will not pretend to say, but almost daily we read of suicides preceded too often by the death by violence of one, two, or even five or six people under circumstances which appear hardly consistent with normal mental balance. So frequent have such affairs become that only when some one of more than ordinary standing becomes the victim do they excite more than temporary local interest or arouse us to the danger which may be very near us.

The remedy for this state of affairs is a subject which demands

earnest thought and radical measures for relief. The evil is so widespread, so thoroughly grafted in the every-day life of society that to think of its immediate or entire suppression would be folly. It is time to attack the evil in some quarter. We cannot expect relief from purely medical means. No more hopeless disease exists among the more common maladies than epilepsy in the adult. The relatively small number of "recoveries" in hospitals for the insane would be diminished if we subtracted the number who are committed to recover from alcohol, and other such cases who go out only to find their way back to some hospital later. Officers of institutions for imbeciles no longer look for restorations to normal brain power in large numbers, and even in such cases as leave the institutions there is a fear that their places may shortly be claimed by their children. He knows that the chief value of his work lies in the knowledge that the high-grade imbecile is safer and the low-grade and idiot more comfortable than he could be made at home. That he has relieved other children of association which would work harm and no good. He has relieved the family of an expense which deprived the other members of their due and the mother of a burden often too great for her. More than this, by enabling one person to care for perhaps five of these children, five families have been able to turn their entire efforts to ordinary social duties unhampered by such a burden as an imbecile child. Moreover, defective imbecile children should become the wards of the State until the danger of childbearing is past. It is not so important with males. I need not explain why girls with strong animal passions and low mental or moral powers need such care.

It seems strange that our marriage laws should be so lax. The marriage of the unfit goes on unhindered. The epileptic may marry his kind and reproduce more of his kind. The drunkard, from a body thoroughly diseased, may cause any number of defective children to become public wards to be supported by the more self-respecting and industrious. There is no legal preventive against the man whose father and grandfather have been insane, and who has been at some time insane himself, from marrying a woman similarly afflicted and charging the bill to the public. The lunacy law of Pennsylvania expressly provides that a patient while still insane may go home for stated periods to resume all his family relations. It is time for a radical change in this condition of things. The excellent example of New York

should be followed in other States, and more accommodation provided for mentally and morally incapable women and girls. More stringent marriage laws should be enacted and enforced. The need of some such law was most strongly impressed upon my mind during my frequent observations of the mothers of feeble-minded children, so many of whom, though not feeble-minded, were surely close to the line. So many had a different name from their child's, from remarriage. Possibly the fathers were the same, but this was not so evident. In one winter, out of five children who died consecutively, four of the mothers had contracted a second marriage. One woman who was said to be the mother of six microcephalic imbeciles, and had two of them in our care, once visited us and announced her intention of contracting another marriage. It is a well-established fact that a mother who has had a microcephalic child is liable to have any successive children similarly marked.

So long as this evil continues it is difficult to see how we can stop the constant increase of this class. Such marriages should be legally prohibited. While women, in every way fitted to fill the post of wife and mother, hesitate before the responsibilities such a position entails, these women should not be allowed to assume such duties as they can never properly fill, at so great a public cost, for the mere gratification of animal instinct or a prospect of support. Such a law would not be unjust. The right of society to control all powers which militate against the general good ought not to be denied, and such a law judiciously applied would work no material hardship and interfere with no one's just rights. The marriage of an epileptic is a crime. It is almost absolutely sure to result in the birth of human beings foreordained to a lifetime of suffering.

On whom does the responsibility of righting these wrongs fall more heavily than upon ourselves. No one understands so well as we how surely the fruit follows the seed in these matters, and no one's word would have the same weight in moulding public opinion to force proper legislation to this end. The marriage of the unfit should subject the perpetrator to punishment as surely as would any other offence against the public peace and morals. The whole body of the intelligent public would agree with us in this matter. The clergy would endorse such a move, perhaps excepting a few who are entirely unworthy of the vocation they have assumed, who disregard the divine warning that the conse-

quence of the father's sins shall surely descend to the children, and cheerfully assist, for a marriage fee, in perpetuating the evil.

These two measures, of providing safe and comfortable homes for the weak and preventing in some measure marriage among those who can only perpetuate and increase human suffering, poverty, and crime, fall far short of fully solving the question, but they have the advantage of being practicable, and furnish, so far as I can see, the only radical method of presently reducing this class to its minimum number, for it truly attacks the evil at the root. We cannot abolish human weakness and sin, but we can deprive it of the seal of the State and the Christian church.

Pasteurian Treatment of Rabies,—Misleading Statistics.

BY CRESSY L. WILBUR, M.D.,

Division of Vital Statistics, Department of State, Lansing, Mich.



HERE is much scepticism existing in the medical profession in regard to the value of the Pasteurian treatment of rabies, even to the extent of denying the actual existence of the disease or its presence in many of the cases treated and in some of the deaths ascribed to it. On the other hand, among the laity, and among many well-informed professional men, the Pasteurian method for the prevention of hydrophobia is regarded as a model of what preventive treatment can accomplish and its results as well-nigh perfect. In a recent discussion before the Michigan State Medical Society, referring to the antitoxine treatment of diphtheria, a member said, "The mortality in the Willard Parker Hospital, in New York, has been reduced but 10 per cent. Now the beneficial effects of a *true specific* [italics of original] can be seen in the wonderful reduction in the mortality from hydrophobia produced by Pasteur's inoculations,—namely, from 80 or 90 per cent. to 2 or 3 per cent."

Such a favorable opinion of the method is fostered, at the first glance, by the statistics given to the world by the Pasteur "institutes." Hydrophobia, once developed sufficiently for diag-

nosis, is considered an invariably fatal disease. Persons bitten by rabid animals are commonly regarded as doomed to certain death unless “saved” by the preventive inoculations. The statement, therefore, that a large number of persons bitten by animals known or supposed to be rabid have been treated at a certain “institute” during a given period of time, and that an incredibly small number, generally about one-half of 1 per cent., has succumbed to the disease, is supposed to reflect great credit upon the efficacy of the treatment, and to be equivalent to saying that a large number of valuable lives has been saved thereby.

The fallacy of the argument lies in the assumption that the liability to hydrophobia and death is very great among the class of patients treated by the “institutes.” Probably not over 5 or 10 per cent. of the cases treated, at the most liberal estimate, would have ever had hydrophobia if no treatment had been given them. Indeed, were accurate statistics available, it is not unlikely that the death-liability would be considerably under 5 per cent., perhaps only 2 or 3 per cent. In substantiation of these conclusions let us examine the latest statistics of the parent institute at Paris.

STATISTICS OF PASTEUR INSTITUTE, PARIS, 1886-95.

Years.	Persons Treated.	Deaths.	Mortality, Per Cent.
1886	2671	25	.94
1887	1770	14	.79
1888	1622	9	.55
1889	1830	7	.38
1890	1540	5	.32
1891	1559	4	.25
1892	1790	4	.22
1893	1648	6	.36
1894	1387	7	.50
1895	1520	2	.13
1886-95	17,337	83	.48

NOTE.—Of the 1520 cases treated in 1895, 1263 were natives of France, and 257 were foreigners.

Of the 1263 natives of France who were inoculated during the year 1895, how many would have died without treatment? How many deaths from hydrophobia actually occurred in France during the year 1895? Unfortunately I have no answer for the latter question, although I have sought the statistics. It appears to be

strangely difficult to obtain a statement of deaths and death-rates from hydrophobia in France for a series of years, inspection of which would quickly answer the question as to the efficacy of Pasteur's method. In response to a request for such information addressed to the *Bureau de la Statistique Générale de France*, I received not the data I required, but the statistics of the Pasteur Institute given above, which are quite a different matter. No data relative to France will be found, moreover, in the statistics from Italian sources quoted in the following table :

DEATH-RATES FROM HYDROPHOBIA PER 1,000,000 LIVING
POPULATION.

Country.	Periods of Years.	Deaths per 1,000,000 Population.
England	1858-60	.0
"	1861-65	.4
"	1866-70	.8
"	1871-75	2.0
"	1876-80	1.8
"	1881-85	1.2
"	1886-90	0.6
Ireland	1887-91	2
Italy	"	3
Austria	"	3
Belgium	"	3
France	"	x (= 3 ?)
United States (census)	1890	2.3

NOTE.—Rates for England are from the registrar-general's report for 1894; those for Ireland, Italy, Austria, and Belgium are from *Cause di Morte Statistica degli Anni 1891 e 1892*, p. 62, published by the Italian government.

The death-rate for France from this disease is only conjectural. It is a fair assumption, however, that it is not greater than those of Italy, Belgium, and Austria, or three per million. If it were only as high as England's rate, or about one per million, then there would die in France annually from hydrophobia about forty persons. Three times this number, or 120 deaths from hydrophobia per annum, corresponds to the assumed maximum rate for France of three per million. Now this number is only about 10 per cent. of the persons treated, so the death liability would only be one in ten, supposing that all persons bitten in France were treated at the institute and that no deaths occurred in persons refusing or unable to be inoculated. Both of these supposi-

tions are very favorable to the Pasteurian method. As a matter of fact, the death-rate from hydrophobia has probably not been entirely wiped out, even if greatly reduced. If diminished one-half, then the death-liability of the cases treated would become about 5 per cent. Out of the 17,000 cases treated since 1886, only some 850 to 1700 would have been liable to die from hydrophobia if untreated, and the actual mortality of about eighty represents a reduction in the fatality of from 90 to 95 per cent.

We may understand these statistics, then, by bearing in mind that the claimed reduction in mortality to .5 per cent. is not from a possible death-liability of high degree in the patients treated, but only from a probable percentage of fatality ranging from 5 to 10 per cent., or even less. Such a reduction is a matter of great congratulation, and redounds to the permanent glory of the immortal discoverer. It is a matter of regret that the method of presentation of the statistics of these "institutes" should seem to sanction claims that every student of general vital statistics knows to be exaggerated; that the true merits of an effective and beneficent method of treatment should be belittled in the sight of the medical profession by a system of advertising more worthy of the Keeley "institutes" than of the reputation of a man who has done so much for exact science as Louis Pasteur. Reckless exploitation of the terror felt by people generally of the terrible, but exceedingly rare, cases of genuine rabies may lead to excellent financial returns from these institutions, but it is a question whether the unreasonable fear induced may not cause at least as much suffering, if not nearly as many deaths, in nervous individuals, susceptible to suggestion and greedy devourers of the horrors of the newspapers in regard to "deaths from hydrophobia" (many of them proving, on investigation, to be cases of mistaken diagnosis), as the cure actually relieves.

We must look for final judgment in the matter to the testimony of impartial mortality statistics. If the death-rate from hydrophobia in France, or any other country, shows a steady reduction with the use of the Pasteurian inoculations, and one that cannot be ascribed to some other efficient cause, such as the enforcement of muzzling laws, dog taxes, etc., then the value of the Pasteur treatment will have been conclusively proved. In the mean time, we can comfort ourselves with the practical deduction that the whole subject of hydrophobia is quite insignificant from a sanitary life-saving point of view. Death from lightning-

stroke is much more common, and when comparison is made between the greatest mortality from hydrophobia and that of any of the infectious diseases subject to restriction by boards of health, the impropriety of diverting public funds or the attention of sanitary officials from the important preventable causes of deaths to the service of hydrophobia restriction becomes apparent. It is merely a question of economy. The chance of saving one life by the treatment of ten or twenty persons bitten by alleged rabid animals at Pasteur institutes cannot be weighed for a moment with the lives that the same amount of money would save if properly applied by an enlightened board of health to the restriction of consumption, or diphtheria, or typhoid fever, or measles, or scarlet fever, or whooping-cough, any one of which list of diseases causes hundreds or thousands of deaths for every one caused by hydrophobia.

Speaking of the comparative mortality of hydrophobia and lightning reminds one of the good Army-Chaplain Schmelzle, whose labors as a sanitarian have been, perhaps, quite too much neglected in these latter days. He had given his attention to the prevention of each of these causes of death. His feelings, upon being exposed during his memorable journey to Flätz, through the laxity of the sanitary authorities, to the danger of hydrophobia are well depicted.¹

“In Vierstädten, nothing of importance presented itself, except—to my horror—a dog without a tail, which came running along the town or street. In the first fire of passion at this sight I pointed it out to the passengers, and then put the question, Whether they could reckon a system of medical police, well arranged, which, like this of Vierstädten, allowed dogs openly to scour about with their tails wanting? ‘What am I to do,’ said I, ‘when this member is cut away, and any such beast comes running towards me, and I cannot, either by the tail being cocked up or being drawn in, since the whole is snipt off, come to any conclusion whether the vermin is mad or not? In this way, the most prudent man may be bit, and become rabid, and so make shipwreck purely for want of a tail-compass.’”

From which brief extract it appears that the learned catechetical professor knew a thing or two about the diagnosis of canine rabies that is not generally understood at present, and

¹ Army-Chaplain Schmelzle's Journey to Flätz, by Jean Paul Friedrich Richter, translated by Thomas Carlyle.

further must be recognized with regret the loss to science and sanitary progress that appears from the fact that the "Schmelz-lean method" for the prevention of rabies is little in use at the present day,—nay, that we have even yet no reliable statistics in regard to its efficacy.

The Vitality of Disease-Germs.

DR. J. F. EDWARDS, Editor ANNALS OF HYGIENE:



It is impossible to keep too constantly before the public the fact that the germs of infectious disease are often extremely long-lived and capable of resisting great extremes of temperature. This is the case, perhaps, with regard to scarlet fever to a greater extent than with regard to most other infections. The instance which follows occurs in the annual report of Dr. H. Garey, County Medical Inspector to the State Board of Health for Somerset County. It is important as regards the length of time during which the germs preserved their vitality, the material which harbored them, and the efforts at their destruction which had been made.

Trusting that you will be able to find room for the following extract in the ANNALS OF HYGIENE,

I am, yours truly,

BENJAMIN LEE, M.D.,
Secretary State Board of Health of Pennsylvania.

EXTRACT

From the report of Dr. H. Garey, County Medical Inspector to the State Board of Health for Somerset County, Pennsylvania.

"In regard to scarlet fever we have had sporadic cases of a mild form and some that were malignant. There were cases in a light form in Somerset, Rockwood, Meyersdale, Berlin, and Downey. There were six cases in two families near Downey. I mention these because of their origin.

"Two years ago a child died from scarlet fever about four miles from Downey. The cradle in which the child died was afterwards sold at public sale and purchased by parties having knowledge of the death of the child. They brought the cradle home and placed a babe of 8 months in it to sleep. In about ten days a rash came out over the child which made it quite sick. I was called to see the case and informed them that it was a case of scarlatina. They were much surprised as there had been none in the neighborhood for two years. This brought out the history of the cradle. They had washed the cradle at least six times

with hot water and did not think any germs could live after two years' time and different ablutions. The babe recovered, and another boy, aged 2 years, took the fever, then the mother, next the aunt, who had been helping to care for the children, then the grandmother, aged 60 years. After her, the father of the children. All had it in a severe form, but all finally recovered. There were no other cases in the neighborhood before or after, as I took the precaution of keeping persons away. This case shows how the infection can and does remain in clothing and, as in this case, in wood, after repeated washings and after two years' time, as there was no opportunity to have contracted it from any other source."

Hygiene versus Drugs.¹

Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5 to 8, 1896.

BY C. F. ULRICH, A.M., M.D.,

Wheeling, W. Va.



THE American people have been called a medicine-taking nation. If the quantity of drugs prescribed by physicians, the masses of patent medicines, the barrels of so-called home remedies, such as teas, decoctions, infusions, and other monstrosities, swallowed by the American people, were ascertained, collated, arranged, and published in a book, it would strike the reader dumb with astonishment. The fact that any human body can survive the injection of such an endless variety of vegetable, animal, and mineral poisons as are poured into the patient and unresisting stomach, and thence distributed throughout the various channels, acting upon the digestive organs, the circulation and the nervous system, proves that man is indeed "fearfully and wonderfully made," and has much greater powers of resistance than we would believe possible.

Let us suppose that an individual has what is commonly called a cold, which may be catarrh of the pharynx, the tonsils, the larynx, the trachea, the bronchi; it may even be an incipient pneumonia. This person tells his or her suffering to a neighbor, the neighbor replies, "Oh, I had that, and I took such and such

¹ From the Journal of the American Medical Association.

medicine." Immediately the article is procured and taken. Another one comes in, hears the tale of woe, and recommends something else, this also is duly swallowed. By the time the gauntlet of the whole neighborhood has been run, and the entire catalogue of the domestic and the proprietary pharmacopœia has been exhausted, the patient has either recovered by virtue of his good constitution in spite of the horrible dosing, or the disease has progressed to a dangerous stage. In the former case, the wisdom of the neighborhood gossips or the excellence of this or that patent medicine is lauded to the skies; in the latter case the doctor is called in and is told they have given the patient everything that everybody recommended, and having failed, they now call him in to try his skill. Thrice happy is the poor doctor if these busybodies have left enough constitution and vitality in their unfortunate victim to give him even a faint prospect of working a cure. If, however, owing to the exhaustion of the vital powers, or the general subversion of all the functions of the body by the heavy, indiscriminate and absurd dosing to which the poor sufferer has been subjected, the doctor fails to cure him, all the vials of wrath will be poured upon his devoted head by the would-be doctresses in the neighborhood. If he thinks the patient requires rest from drugs and gives nothing, he is promptly discharged and another one called in, who will come up to their standard of excellence by ordering some kind of medicine to be taken every hour or oftener. I have frequently been told when presenting a bill that certain visits should not be charged for, because I did not make the patient take medicine on those days. My answer would be that it required as much medical knowledge to determine when medicine is unnecessary as to know what remedies are required. It has often been suggested to me by my patients or their families that it is not necessary to come every day, but to return about the time the medicine is exhausted, in order to prescribe more. It does not occur to these individuals that the physician's duty is to watch the course of the disease, note its changes, assist nature in her efforts to bring about recovery, prescribe suitable remedies against unfavorable tendencies; in short, to act as a kind providence to watch over the patient and promote recovery. They imagine the physician's business is to pour all sorts of drugs down the poor patient's throat and keep him constantly saturated with medicine. While engaged on the preparation of this paper, I visited one of my patients in the

afternoon, whose medicine was exhausted in the morning. I found the family in terrible trepidation because he had not been dosed for six hours. The fever having abated, the temperature normal, the pulse regular, the patient free from pain, he was all the better for getting a little rest from drugs; but the family had suffered agony on account of my coming so late, and were on the point of sending a messenger to my house to inquire what was to be done. It is often necessary to prescribe a placebo in order to retain the patient. The physician who studies nature carefully, who makes himself thoroughly acquainted with the physiologic and pathologic processes of the human organism, acquainting himself with all the changes that take place in the interior of the body, both in health and disease; giving the proper remedy at the right time and refraining from the administration of drugs when nature is doing the work for him, will be successful where success is possible; although he may sometimes confront the prejudices or the dense ignorance of his clients, and thus lose caste with some of them; but in time it will be better, not only for the patient, but for the physician himself.

I can call to mind very many families who had abandoned me for some new and more complaisant physician, who would prescribe large quantities of drugs, resort to a variety of mechanical methods, that he represented as new, convincing the family thereby that he possessed more knowledge and skill, who finally became disgusted with the meddlesome activity of the new man, and returned to me saying, "I like the old doctor best after all." Having said as much as is necessary about the pernicious abuse of drugs, let us see what we can offer as a substitute. Hygeia, in the ancient mythology, was the goddess of health. We call this divinity *Vis Medicatrix Naturæ*, the healing power of nature. To the diligent student of nature and of physiologic processes in the human body, this divinity, Hygeia, assumes a greater importance than is generally attributed to her by the young and inexperienced practitioner. In a paper read at San Francisco, in 1894, entitled, "Cleanliness the Chief Antiseptic," I endeavored to show that the earnest and continued effort to prevent the development of bacilli and their entrance into the human organism, is of much more value in promoting health than the effort to destroy them after they have been introduced or to relieve the system of the disease caused by their presence. This is the first consideration in the study of hygiene, which was

fully discussed in that paper. But, as every physiologist knows (and every physician should be a thorough physiologist), there is a very complete apparatus in the human system to carry off, not only the waste material in health, but to dispose of the results of abnormal processes and of disease caused by the introduction of malignant bacilli. This consists of the various emunctories, as the large intestine, assisted in part by the entire alimentary tract; the urinary apparatus,—*i.e.*, the kidneys, the ureters, the bladder, the urethra; the skin with its system of transpiration,—*i.e.*, the sudoriparous glands and ducts. Now, although physicians know all about these, the masses are ignorant of the importance of keeping these emunctories in order, and many physicians are inclined to be careless in this direction. Bacteriology, antiseptis, and abdominal surgery have so engaged the attention and called forth the enthusiasm of our modern practitioners, that the good old custom of investigating the bowels, the kidneys, and the skin is often lost sight of. How much misery and suffering might be avoided, what an enormous quantity of patent pills and other purgative drugs would be rendered useless, and the sums of money wasted on them might be devoted to making the family more comfortable, if proper attention were paid to keeping the intestinal tract in good condition, which could be done without taking pounds of pills or swallowing gallons of medicine, by simply adopting a sensible and hygienic system of diet, by observing proper times for attending to the calls of nature, by never allowing other avocations or a false notion of propriety to interfere with the performance of that most important function. How much kidney-disease might be averted by only introducing into the stomach such liquids as contribute to the preservation of the proper relations between the solids and fluids of the body. Here some one asks the question, "Shall we live like the beasts of the fields, drinking nothing but water? Shall we not pay some attention to the taste which nature has bestowed upon us, and enjoy the pleasant beverages with which the world abounds?" I do not propose to be so severe; you may enjoy the pleasant beverages that nature, assisted by the art of man, furnishes you, but you must practise moderation; you must become acquainted with the capabilities of your organization; you must study the effect of these beverages, and stop before the point of deleterious influence is reached. When you see a man suffering from that deadly malady,

Bright's disease of the kidneys, take it for granted that he has abused that great organ, whose function it is to rid the body of worn-out and dead material. It is a very patient and long-suffering organ, that will submit to an immense amount of abuse ; yet there is a limit to its endurance, and it must eventually succumb. The skin, an important auxiliary to the kidney, can be kept in a healthy condition by attending to hygienic rules. If we promote perspiration by reasonable and moderate exercise, and by keeping the pores open through frequent ablutions, we will find much poisonous material carried off that the kidneys would fail to dispose of. If these two organs, the kidneys and the skin, are treated according to the rules of hygiene, much disease will be prevented and the taking of enormous quantities of drugs avoided. The stomach, that great workshop, in which the first stage of converting food into tissue is accomplished, is as much abused as the kidneys and the skin. All kinds of incongruous, indigestible, and injurious articles, under the false name of food, are forced into the long-suffering and much-enduring stomach ; indigestion or dyspepsia, which brings in its train so many other ills, is the inevitable result. This was for many years the prevailing disease of the American people, causing them to be distinguished by their sallow complexions and pinched features. The consequence is that the sufferer, not knowing what is the matter with him, resorts to all kinds of absurd medication, throwing the entire machinery of the body out of gear, thereby damaging the intellectual faculties and ruining the disposition. There is not a more unfortunate creature in existence than the chronic dyspeptic, a source of misery to himself, to his family, and to all who come in contact with him. Now, how is this to be prevented? Not by filling the stomach with drugs which, in many cases, act as a foreign body, or even as a poison. It can only be avoided by learning the requirements of the system, the ability of the stomach to dispose of the ingesta, and the peculiar characteristics of the food to be supplied. Another thing to be avoided is the unhealthy habit of bolting the food to gain time for business, neglecting mastication, an essential process in digestion, and swallowing the too often unhealthy food with such rapidity that it forms at first an inert mass and afterwards ferments, producing gastralgia, acidity of the primæ viæ, with a long train of disastrous consequences. This is perhaps the most important branch of hygiene, and should be studied by every

parent and by all the children old enough to understand it. The hygiene of drinking-water has been sufficiently discussed to require no mention here. Already intelligent housekeepers are filtering and boiling their drinking-water, and the remarkable absence of typhoid fever in our city shows that this reform has borne good fruits. The hygiene of the lungs, the heart, the liver, etc., would require space enough for another paper; hence the examples given must suffice.

The question may be asked, "What has all this to do with State medicine?" The answer is plain, Give all your working men and women, your employés in stores, offices, factories, etc., ample time to consume their food leisurely; let none but healthy teachers be employed in your schools; require every teacher to be well versed in the elements of physiology and hygiene, and require them to teach these branches to the children who are old enough to understand them; devote a reasonable amount of time in the schools to physical culture; require the teachers to inculcate general rules of health into the minds of the pupils. Another thing I would recommend: Let schools for hygienic cooking be established at the public expense, to enable poor people to enjoy healthy food as well as the more prosperous. Much of this can be accomplished by intelligent legislation. If the rules barely hinted at in this paper be carried out by the more intelligent part of the community, and taught by precept and example to the masses, the unreasonable consumption of drugs will be reduced to a minimum, and the health, prosperity, and happiness of our people will be more than doubled in a few years.

Improved Eye-Glasses for School-Children and Artisans.

The *Revue Générale d'Ophthalmologie* for May describes some spectacles for school-children which have a celluloid trap-cover for each glass that falls down over them whenever the head droops forward, and springs back into place as soon as the head is held upright. The other is a working-glass for cases of excessive myopia. It is a metal plate pierced with stenopeic openings in the direction of the twelve principal meridians, radiating from around the pupil. It improves the sight to such an extent that myopia of 10 D is corrected to 1 and -4 D. It also proves useful in irregular astigmatism.

Public Turkish Baths Needed.¹

BY CHARLES H. SHEPARD, M.D.,

Brooklyn, N. Y.



THE action of the New York Board of Health in appropriating \$30,000 for applying the discovery of antitoxine in the treatment of diphtheria, encourages the hope that in the near future the public mind may be quickened to recognize its opportunities and its necessities in other and broader fields. It is time to appreciate the fact that we are our "brother's keeper," and that whatever works harm to him reacts upon ourselves. This action of the health board also indicates a growth in public sentiment that will encourage and sustain important measures for the public welfare. It is a moral duty as well as a principle of public polity, in all civilized countries, to protect the people from the invasion of infectious disease, and it would be very short-sighted to stop at mere infection. The use of antitoxine is only to supply a temporary exigency. It does not purify the homes of the people or teach them to take better care of their bodies or sanitary surroundings. We need something to uproot the cause of the disease, and when this is secured, it will be found that many other diseases have disappeared.

The Romans understood and perfected public sanitary works on a most stupendous scale, as is witnessed, among other things, by their aqueducts for bringing pure water to the city of Rome. Magnificent ruins of many of them are standing to-day, and some of them are in use at the present time.

It is known that in India, the home of cholera, the city of Calcutta is now protected from epidemics of that fearful scourge by the supply of comparatively pure water that has recently been furnished the city.

When the community can be assured of pure water to drink and pure food to eat, with proper bathing facilities, the enjoyment of life will be much enhanced and its length prolonged.

In a recent report of the Committee on National Quarantine

¹ From the Journal of the American Medical Association. Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5 to 8, 1896.

of the New York Academy of Medicine, it was stated that "the most certain protection of this or any other country against the ravages of infectious disease lay in the practice of internal sanitation." What is true of the State is also true of the individual. The more cleanly a man's habits, and the purer his food and drink, the less liable he is to disease, because his body is thereby rendered naturally immune to disease. Whatever our theories as to prophylactic measures in the prevention of disease, the production of a barren soil for the growth and development of pathogenic germs is of greater importance than the destruction of the germs themselves, though efforts should be made in every direction for the elimination of all diseases. Various theories have been offered by different authorities concerning the processes and changes that take place in the body in consequence of artificial immunization, but the scientific controversy regarding it has not yet been settled. Suffice it to say, that the more pure and active the fluids of the normal living body, the more powerful are the bactericidal properties thereof.

There is at present a revival of a favorite practice of the ancients, and that is their system of bathing. The old Roman baths, which are identical with the Turkish baths of the present day, were prominent features of the daily life of the Romans and were counted among their choicest privileges, and so continued during the period of their greatest prosperity. They were then carried to a scale of perfection never surpassed. The baths of Diocletian, which were the largest ever built in the world, were capable of accommodating 18,000 bathers at one time.

We have heretofore maintained, and would reiterate, that as one of the great sanitary necessities of the day, it is most desirable that large public Turkish baths, as a preventive of disease, should be established throughout our cities at public expense, placed under medical supervision, with admission at nominal rates, so that the poorest individual could partake of their advantages with a feeling of self-respect in paying something for the help and comfort to be derived therefrom. They should be made attractive, and thus draw people from demoralizing enjoyments. This would react on the social life of the community, and by purifying the people would purify their homes.

We support public schools, and compel our children to attend them. With more propriety could we furnish public Turkish baths, and insist upon every man, woman, and child availing

themselves of their luxuries at least once a week. The physical is of greater importance than the mental ; indeed, it is of the first importance to the State.

Herein would wealth have a royal opportunity to consecrate itself to the service of mankind. The endowment of public baths was among the most noble actions of the Roman emperors. Eight hundred of those institutions adorned the capital of the empire, and they supplied, during many eventful years, almost the only medicine to a people distinguished for their corporeal and mental vigor.

Among the important results that are brought about by the use of the Turkish bath may be mentioned (1) a perfect cleansing of the external body, and relief from any undesirable odor, replacing therefor the beauty and fragrance of health ; (2) a purification of the blood by the elimination of its impurities through the surface of the body ; (3) an equalization of the circulation and perfect distribution to and through every organ and tissue of the body, however remote ; (4) the speedy elimination of blood-poison, laying the foundation for (5) increased nutritive changes throughout the whole body ; (6) a relaxation by heat of the tissues of the body, and thereby relief of congestion, whether located in the lungs, bowels, or other organs of the body, or in the muscular tissues, as shown in the relief from rheumatism, malaria, etc. ; (7) absorption of exudates and inflammatory products ; (8) better ventilation of the lungs, and the placing of climatic treatment on a scientific basis ; (9) greater activity of the secretions and excretions ; (10) the prevention and the eradication of the predisposition to disease ; (11) strengthening of every vital organ, and therefore an increase of vital capacity.

The arguments in favor of public Turkish baths are both manifold and important. To enumerate but a few of them :

They would be comparatively inexpensive.

They would lessen the cost of medication.

They would prevent the spread of epidemics.

They would render extinct many classes of diseases.

They would lessen the demand for stimulants of every kind and render the police force less necessary.

They would be more powerful than any law of prohibition, because they would be more attractive than the saloons.

They would reduce the expenses of hospitals and asylums.

They would shorten the time necessary for patients to remain in such institutions.

They would reduce the demand for hospitals, so that what are already built would be sufficient for a generation to come.

They would help towards the refinement of the community.

They would vastly prolong the average of the life of the people.

They would add to the enjoyment of life, by making everybody healthier and happier.

They would tend to render the cities that adopted the bath pre-eminent among all the cities of the world, and be an example for all other cities to follow.

They would redound to the honor and conduce to the growth of such cities, and continually increase the numbers of the better elements of their citizens.

They would uplift the community and tend to develop a superior race of mankind, as handsome as were the Greek models, and as powerful as ever were the Romans.

To the individual the Turkish bath is the perfection of sanitary science, and to the nation it is the coming blessing.

These few reasons but imperfectly state the great need and many advantages that would accrue to the community adopting the practice of public Turkish baths.

Poisonous Effects of Borax.

At the present time there are a vast number of preparations intended for the cure and preservation of foods, which depend for the claim advanced upon the large portion of sodium baborate contained. This fact has led Fere, of Paris, who has had considerable experience with the drug in the treatment of intractable cases of epilepsy, to investigate its physiological action. He several times found it necessary to give large doses for long periods, and frequently met with persons who were peculiarly susceptible to the drug. The untoward effects were loss of appetite, succeeded by burning pain at the pit of the stomach, buccal dryness, and eventually nausea and vomiting. Also a remarkable dryness of the skin was produced, which not only favored, but in several instances caused skin maladies, notably eczema; the hair, also, became dry and fell out, threatening complete baldness. The most dangerous result of the use of sodium baborate is its power to increase kidney-disease, or to convert a slight renal malady into a fatal or malignant affection.—*New York Medical Times.*

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What is the Destiny of Man?

IF he keeps his liver, stomach, and bowels in good order he will not lie awake at nights pondering over his destiny, yet, in these days of advanced thought, nearly every one is constantly fretting and fuming about his destiny.

To our way of thinking, such reflections give not evidence so much of superior intellect as of inferior vitality; the normal brain in the normal body responds automatically to the suggestions of normal surroundings and normal actions are the result; the healthy man does not worry as to the possible result of his actions; he does that which he feels to be right and trusts to Providence, so to speak. A young woman, two hours after the birth of her first child, asked us, anxiously, whether she would get up with disordered ovaries; our reply was that if she would put her ovaries out of her brain, the chances were that she would have no trouble with them. To this she replied that so many of her young friends referred all their abdominal aches, pains, and distress to the birth of the first child. Because, we answered, humanity has become so morbidly introspective that the ovaries and womb no longer remain unconsciously present in the abdomen, but are forced into conscious prominence in the brain.

Our mothers did not even know that they had ovaries, our

daughters talk of nothing else. This is all wrong, and the tendency which it typifies is wrong.

What we want is less cerebation and more animal health. "Man's destiny" is solved by the man who has good health.

Trees as Rainmakers.

Scientists who have studied the situation claim that an oak-tree of average size, with say 700,000 leaves, lifts into the air from the earth about 123 tons of water in the five or six months in which it displays its foliage, says the *Times-Star*, of Cincinnati. From leaves water is evaporated and formed into the clouds which supply the rain. Doesn't this make clear the necessity for more interest in arboriculture in this latitude and longitude, which is now suffering from a drought of at least two years' duration? In the current year there is a deficiency in the rainfall amounting to more than ten inches. Such prolonged droughts have never been known since an official record of the weather has been kept. The fact is the water lifters have been cut down and destroyed in the Ohio valley until the situation has become serious. The apparent alternative now is to either irrigate or restore the forests, as forests have been restored in many parts of Europe.

Hygiene Pays.

That public parks in cities are good investments from a sanitary stand-point goes without saying. That they are also profitable as a pecuniary investment is shown in a recent report by J. Clyde Power, landscape engineer, recommending extensions of the park system in Indianapolis. He cites New York as a notable instance of the great increase of value accruing to land in the vicinity of parks. In 1856 the assessed valuation of the three wards adjoining Central Park was \$20,429,565; in 1873 it was \$236,081,515, a gain in seventeen years of \$215,651,950. The natural average increase of three other wards in the city, taken from all the wards, except the ones adjoining the park, showed only \$53,000,000, making the earning capacity of the park \$183,081,515. In Brooklyn, in 1864, Prospect Park, 515 acres, was acquired, and the increase in valuation in three years was 38 per cent.



A Cool Bed.

Those who sigh for cool resting-places in warm weather, and yet cannot give up their soft beds, can gain what they want by laying heavy white awning canvas under the sheet. So cooling is the effect of doing so that those who try it will be obliged to remove it on a cool night.

Sparrows or Rats?

In city streets, sparrows are the most active scavengers we could have for their size. It ought to be more generally known that as the sparrows increase in cities rats decrease. Rats decrease because the birds leave so little for them to live upon. Sparrows or rats, which shall we have in our great cities? Sparrows, by all means; they are neither dangerous nor unsightly like the rats, and do a better work than the rodents.

Good Temper.

Good temper ministers to success in all undertakings much more largely than we imagine. It gives a quiet and an undisturbed mind favorable to concentration of energy. How can one whose feelings are continually ruffled and whose temper is roused to irritability or anger pursue his work with the attention it demands, or make decisions which require the undivided and earnest use of all his faculties? Nothing can be more essential to success than the full command of the powers; but ill-temper in all its forms makes this impossible.

The Use of Carpets.

Carpets were first used hundreds of years ago by the inhabitants of Eastern countries, such as Egypt, Syria, Turkey, and Persia. In the countries named they form the chief article of furniture found in all ordinary dwelling-houses. The manu-

facture of carpets is said to have been introduced into Europe by the French in 1589, during the reign of Henry IV. In England it was not until the middle of the eighteenth century that carpets were made to any great extent. The first carpet manufactory in America was established in 1791 at Philadelphia. A Boston genius named L. B. Bigelow invented the first power-loom for weaving ingrain carpets; the date of its introduction into practical use was 1839. At the present day carpet-making is an important industry of the United States.

New Use for a Bicycle.

In the New York State Reformatory a new use has been discovered for the bicycle. The captain of the watch makes his rounds within the prison proper through the main corridors on a cycle. The distance is over half a mile. His trips are swift and noiseless, and he is thus enabled to keep his subordinates on the alert at all hours of the day or night, as there is no telling when he may bear down upon them.

To Drive away Insects.

Many people do not know how easily they can protect themselves and their children against the bites of mosquitoes and other insects. Weak carbolic acid sponged on the skin and hair, and in some cases the clothing, will drive away the whole tribe. We have no doubt that horses and cattle could be protected in the same way from flies, which sometimes nearly madden them.

Origin of the Cocktail.

The most remarkable explanation of the origin of the word "cocktail," according to the *New York Press*, comes from an ancient print. The old doctors had a practice of treating certain diseases of the throat with a pleasant liquor, applied with the tip end of a long feather plucked from a cock's tail. They finally began to use this preparation as a gargle, and the name cocktail clung to it. The gargle gave way to an appetizer, and the appetizer to a mixture of bitters, vermouth, and liquor, that is still in occasional demand.

Inequality.

By actual measurement of fifty skeletons the right arm and left leg have been found to be longer in twenty-three, the left arm and right leg in six, the limbs on the right longer than those on the left in four, and in the remainder the inequality of the limbs was varied. Only seven out of seventy skeletons measured, or 10 per cent., had limbs of equal length.

Boards of Health and Cemeteries.

A law was passed in New Jersey, which was approved March 5, 1896, that provides that no new cemetery shall hereafter be established, nor shall any cemetery now existing be enlarged, or any lands not now used for cemetery purposes be used for such purposes in cities of the first class in that State without the consent of the common council and board of health of such city, to be expressed by resolution and the approval thereof by the mayor of such city.

Quarantine in Diphtheria.

An outbreak of diphtheria occurred recently in the village of New Matamoras. Cases developed in a short time. The board of health promptly adopted strict measures to prevent further spread of the disease. The houses containing cases of the disease were placed under strict quarantine. Guards were appointed, and the disease was treated as though it were small-pox. Two cases developed in houses already quarantined, but so far, after the lapse of two weeks, no new homes have been invaded. Instances of this kind are frequently reported and demonstrate the utility of such measures. In many of our cities and villages quarantine consists simply in placarding the patient's house and prohibiting children in the family from going to school. Adult members of the family come and go, with little or no precautions against carrying the disease. This should be stopped. In some cases, where the patient can be properly isolated,—that is, placed in a room entirely cut off from the other parts of the house,—and a nurse installed who does not come in contact with other members of the family, it may be permissible to allow the bread-winner to continue his labor; but unless such precautions are taken, all the inmates of a house containing diphtheria should be quar-

antined. Perhaps the best plan for all would be to have the members of the family, who are engaged in business or at labor, leave home until danger of carrying the disease to others has passed.—*Ohio Sanitary Bulletin*.

London Ice Cream.

According to the British Institute of Preventive Medicine the ice cream sold by London street peddlers, when examined by a microscope, shows the presence of bedbugs, bugs' legs, fleas, straw, hair, coal dust, wooden and linen fibre, tobacco, epithelial scales, and muscular tissue. Even the microscopical examination, however, is delectable compared with the results of bacteriological studies. These reveal in street-barrow ice cream a maximum number of 7,000,000 microbes per cubic centimetre, while the ice cream of the shops has only 1,000,000 per cubic centimetre. The character of the micro-organisms is extremely mixed. There are the bacteria coli commune, besides spirillæ and putrefactive microbes of various kinds.

Digestion and Assimilation.

It has been very truly remarked that the value of a food article depends not at all upon the proportion of "elements" which may be discovered therein by chemical analysis, but on the amount which can be extracted therefrom by the laboratory of human digestion, and with the least effort and delay be taken up to rebuild the wasting tissues. These qualities make the milk and the oyster, though neither shows a high percentage, so valuable. The former contains all the elements which go to sustain life, in condition to be readily taken up and assimilated. But to this end—and it is the one fact which many people do not understand—only small quantities should be taken at a time,—that is, the supply required should be administered gradually. The young of all animals are by nature obliged to obtain their milk-food slowly, giving their digestive powers a chance adequately to do their work; and the lesson holds good for adults who seek nourishment from the like material. The oyster, in its raw state, is practically self-digesting, but when over-cooked it becomes not only distasteful to the palate, but also slow and hard of digestion. The substance of all logic in the matter is, simply,

that for every-day life an adequate supply of plain food, well-cooked, taken at regular intervals, and under the right condition furnishes the only sure foundation for a healthy activity of body and of mind.—*Good Housekeeping*.

Substitute for Yellow Phosphorus in the Manufacture of Matches.

Gurowitz announced at the meeting of the K. K. Ges. der Aerzte of Vienna, May 15, that he had discovered a substitute for the dangerous yellow phosphorus in matches, which is perfectly harmless, is easily applied to wooden and wax matches, lights on any rough surface, and has a very high self-light-made by melting together sulphur and red phosphorus. The substance thus formed can be pulverized without danger and the other ingredients are entirely harmless. The members of the board of health were so pleased with their investigation of it that they at once petitioned the government to forbid henceforth the use of the poisonous phosphorus altogether.—*Wiener klinische Rundschau*, May 24.

Scarlet Fever in an Old Letter.

A fresh warning comes from the Iowa State Board of Health, in a sporadic case of scarlet fever reported from the city of Rock Rapids. The mother of the patient had received, a year before, a letter from her sister, whom she had intended to visit during the holidays of 1894, warning her not to come, as the writer's children were then sick with scarlet fever. One day in last December the mother was looking over some old letters and the children were around her. When this letter was reached the little girl exclaimed, "There is auntie's letter," and proceeded to open it out and held it some little time. Three days later the infection did its work.—*Exchange*.

Infant Feeding.

Dr. Cheney (*Occidental Medical Times*) believes that mothers usually feed their babies too often. At first the interval should be about one and a half hours; at six weeks given food every two hours; three months at every three hours; at six months give

every four hours, and keep that interval from then on. As to the manner of feeding, he says, we have all seen failures in infant feeding, not due to quality, quantity, or irregularity, but caused by bolting the food. We cannot do so ourselves without suffering thereby. The baby is usually given the bottle and literally "swills" its contents down, a whole bottleful, which is the source, usually, of the indigestion. The nurse or mother should handle the bottle and allow the baby fifteen minutes to drink what may be in it.

Common Sense versus Desire.

The cheap restaurant started by the Clark Thread Company of Newark, for the benefit of its employés, has been abandoned because the employés failed to patronize it. The restaurant was started last fall, and was run at a loss for seven or eight months. During the winter the patronage was encouraging, but when warm weather came the trade diminished. The object of the restaurant was to encourage the operatives, and the girls especially, to eat sustaining and wholesome food prepared in a scientific manner, but the young women resented the absence of crullers, doughnuts, and pie, and sneered at the nourishing stews, soups, etc. The prices were very low and the quality of the food was of the best, while there was considerable variety. The absence of pie and cake doomed the enterprise, however. Some practical instruction in physiology in our public schools might avail to correct such mistakes.

Hereditary Drunkenness.

Professor Pellman, of Bonn University, Germany, has made a special study of hereditary drunkenness. He has taken certain individual cases, a generation or two back, and has traced the careers of children, grandchildren, and great-grandchildren in all parts of the present German empire until he has been able to present tabulated biographies of the hundreds descended from some original drunkard. The last person whom Professor Pellman has immortalized thus in medical literature is Frau Ada Jurke. She was born in 1740, and she was a drunkard, a thief, and a tramp for the last forty years of her life, which ended in 1800. Her descendants have numbered 834, of whom 709 have been traced in local records from youth to death by Professor Pellman.

Of the 709, he found 106 were born out of wedlock. There were 142 beggars, and 64 more who lived from charity. Of the women, 181 led disreputable lives. There were in this family 76 convicts, 7 of whom were sentenced for murder. In seventy-five years this one family rolled up a big bill of costs in almshouses, trial courts, prisons, and correctional institutions. Professor Pellman says this bill, which the authorities of Germany, and, therefore, the tax-payers have paid, has been, at least, 5,000,000 marks, or about \$1,250,000.—*Medical News*.

Colds.

Dr. L. Duncan Bulkley finds (*Medical Record*, January 18) that sodium bicarbonate, given in twenty- to thirty-grain doses, in two or three ounces of water, every half-hour for three doses, with a fourth dose in another hour, will usually promptly abort a "cold." At the end of two to four hours, if the symptoms persist, this course may be repeated. This treatment is, of course, not so efficacious after a "cold" is well established. This treatment is based upon the theory that an acid condition of the system irritates the terminal endings of the nerves in the skin and mucous membranes and deranges the capillary circulation. While the theory lacks facts to prove it, there is every reason to believe that this method of treating a cold will prove very useful.

Ireland's Oldest Woman.

The oldest woman in Ireland has seen more years than her name would indicate. She is in the Union Hospital, in Stokestown, County Roscommon, Ireland. Just now she is in her 112th year, and is known still as Kitty Reynolds.

There is no doubt of her age. A couple of giddy young things who are also in the hospital, and who are 90 and 95 years old, respectively, remember distinctly that Kitty Reynolds was a fully-matured woman when they were mere infants. Kitty, as she is called by every one, remembers clearly many incidents of the rebellion of '98, which she tells with considerable power of description.

Her brain is still active and her intellect unimpaired. She can't hear quite as well as she used to half a century or so ago,

but her eyes are still as quick and keen as ever. She is proud of the fact that she can thread a needle quicker than fledglings of 50.

Many years ago, when Father Mathew began his crusade for temperance, she became one of his disciples, and since that time has never tasted alcohol in any form. So firm was she in that determination that only a short while ago, when in a precarious condition because of an attack of influenza, she refused to take stimulants when ordered to do so by her physician.

Schools and Disease,—a Model Preventive System.

Dr. Leslie McKenzie, the health officer for the borough of Leith, refers in his annual report for 1895 to the system followed in the town for the better prevention of the spread of infectious disease by the agency of schools. Each day an official of the School Board of Leith calls upon the health officer for the purpose of receiving hints of infectious cases notified to him and then proceeds to distribute particulars to the different masters whose schools are interested in the cases, with the view of at once securing the absence from school of all children from an infected house until the house has been declared to be disinfected, etc., to the satisfaction of the health officer or some medical practitioner. Head-masters also notify to the school board all cases of sickness coming to their knowledge, and thereupon similar steps are taken. The system is modelled on that obtaining at Glasgow, and gives satisfaction. Given the strict carrying out of the plan it ought to succeed.—*British Medical Journal*.

Dangers from Sewage Farms.

An outbreak of typhoid fever in the village of Wycombe Marsh, England, which seems directly traceable to the pollution of a river by the effluent from a sewage farm, leads *Hospital*, June 20, to conclude, first, that sewage farming demands a high degree of skill and care in order that non-poisonous effluents only may be turned into running streams; and, second, that village wells which are in any close contiguity to sewage farms should, if possible, be closed, and an adequate supply of water obtained elsewhere. Civilization must get rid of its sewage; and sewage farms, when scientifically and conscientiously managed, are ex-

cellent methods of sewage disposal. But it is probable that in no long time they will have to be submitted to competent periodical inspection by a sanitary authority in order that such calamities as that which has overtaken Wycombe Marsh, may, as they ought to, become impossible.

A New Black-Board.

So much has been said of late about the black-board being unsanitary that a novelty is worth mentioning. This is made on the following principle: A sheet of ground glass, of suitable size, is set into a very firm, thin frame. This frame is hinged, so as to swing into another frame attached to the wall. This stationary portion is fitted with a black-board, covered with black canton flannel, velveteen, or serge, velveteen giving the best effect. When the swinging glass is pushed firmly into the frame it presses on the velveteen backing. The ground surface is, of course, outside. This makes a black-board that may be used either for crayons or lead-pencil, as the case may be. There is also a white back, which may be used. This forms an admirable surface for colored crayons. If it is necessary to copy or practise in geometrical designs or flowers, sheets of paper containing them are placed between the backing and the glass, the outlines showing through perfectly. This board has many advantages, and will probably be widely adopted.

The Prevention of Caisson Disease.

According to the *Medical News* the prophylaxis of this affection, or chain of symptoms, has been the subject of experimental investigation in France. M. Hersent, a civil engineer, expresses the firm conviction that the large sacrifice of life in the past has been due to the rapid variations in the degree of compression brought about by ignorance or carelessness. He found that dogs could endure, without danger, a pressure of seventy-five to eighty pounds to the square inch for as much as five hours, provided that twenty-five minutes were occupied in gradually producing the amount of compression and one and a half hours in "decompression," a uniform temperature being maintained. Practically the same experiments, with perhaps a more gradual change in

the pressure, were carefully made upon workmen, with only a little lassitude, lumbago, and slight prickling sensations to the surface resulting. It was thus demonstrated that without overtaxing the workmen they can labor uninterruptedly for four hours or more under a pressure of seventy-five pounds or more,—that is to say, at 150 to 175 feet below sea level, on condition that they should experience a very slow compression and “decompression,” and that the temperature be uniformly maintained.—*Journal of the American Medical Association.*

The Hygienic Importance of Light.

Aside from its influence in other directions, light has a very important action as a disinfectant, as shown by W. Krause. It has a destructive influence on living bacteria, the intensity of its action being dependent on the amount of oxygen present. With increased intensity of light comes increased disinfecting power. It does not act by reason of any heating influence, although the effect is greater the higher the temperature. The greater the relative number of bacteria, the slower appears the action of the light to which they are exposed; and the medium in which they exist has considerable influence on the result. Liquid media containing complex nitrogenous substances are so altered by the influence of light that they take on antiseptic properties against bacteria. This change ensues under the influence of the atmospheric oxygen, and is manifest so much the more according to the intensity of the light and duration of exposure.—*American Journal of the Medical Sciences.*

Chronic Poisoning by Carbon Disulphide.

Dr. Stadelmann, physician to the City Hospital, recently drew the attention of the *Verein für innere Medicin* to certain peculiar symptoms observed in workmen employed in india-rubber factories, and he showed three patients who, after having worked for some weeks in those factories, were seized with giddiness, headache, tremors, drowsiness, loss of energy, and gradual impairment of vision. One of them, a man aged 28 years, complained of xanthopsia, and objects moving in the street appeared to him as if seen through a cloud; he also had painful contractions of the muscles and an increasing difficulty in walking or even in

standing. Another patient suffered from stammering and fear of walking in the dark, and a further remarkable symptom was anæsthesia of certain portions of the skin. All these phenomena were due to carbon disulphide liberated in the factories, and they are quite characteristic, although only a small number of such cases has been reported up to the present time. Some patients declared that their food had a sulphurous taste, and in grave cases insanity ensued. Preventive measures had obviously been neglected, and Dr. Stadelmann thinks special regulations very necessary for india-rubber factories. Workmen showing the symptoms above described ought to be at once removed from the unwholesome atmosphere.

Relief of Thirst and Dryness of Mouth.

Thirst and great dryness of the mouth in sickness is often relieved by a teaspoonful of powdered gum arabic, beaten thoroughly with a couple of teaspoonfuls of glycerin, to which is added a glass of cold water and enough lemonade to make the mixture palatable. The mixture may be taken freely, with great relief to the dryness of the mouth and thirst.—*New York Medical Times.*

Difference in the Death-Rate between the Sexes,— Curious Statistics.

Some curious statistics have recently been compiled by various authorities to show the different death-rate between the sexes. While these calculations have been carried on by different persons, they all show practically the same results. Tables made up from Massachusetts census reports, covering a period of more than a quarter of a century, show that from birth to 10 years of age the male death-rate is in excess of the female. From 10 to 40 the female death-rate is in excess of the male, while the next ten years the rate is about the same. From 50 to 60 the percentage of deaths is the largest with the males, while beyond that time the excess is with the females. Among insurance companies men over 50 are regarded as better risks than women of that age, and a strong man of 50 is preferred as a risk to an equally strong woman of 45.

Dr. J. M. French calculates that out of 1,000,000 persons born, 511,745 are males and 488,255 are females, making an excess of 4.81 per cent. of males. Of this number he estimates that

83,719 males, and 65,744 females die during the first year, which would reduce the per cent. of excess of males to 1.31. At 8 years of age the per cent. of excess has been reduced to 1 per cent. From then to 18 years of age the male excess increases to 1.18, at 39 to 2.08, while at 50 the excess has declined to 0.93 per cent. At 53 the number is equal.

It is believed to be proved by statistics that while more women than men reach old age, there are more men than women who reach the century mark. In Massachusetts, between 1880 and 1890, there were 203 deaths of persons over 100 years of age, and of these 153 were men and 50 were women.

Thus it seems that while more males than females are born and while more males die between certain ages, the percentage is yet in favor of the males. The fact that men go to sea and to war; that they engage in more hazardous vocations than women, and are more exposed is urged as an explanation for the greater death-rate between certain ages. The fact also that women suffer from want of exercise, impure air, and faulty modes of dress is cited to show why more women than men die at some ages.

A Boil on the Nose.

A boil on the end of the nose is painful even though small and seemingly ludicrous, because the skin is not only as thick and tough as that of the palm of the hand, but also because there is very little tissue intervening between it and the cartilage of the nose, as we all know who have tried to dissect these small muscles of the nose. An ordinary poultice, therefore, will not be of any avail, because no further swelling can be obtained in this locality to relieve the pressure, and, consequently, a poultice which will shrink the parts is indicated, and such a one is a raw cranberry, crushed, laid over the boil or pimple, and kept in place with a daub of stiff boiled starch. Try it, and you will find it to relieve the excruciating pain within a short time, and cure the trouble in twenty-four hours.—Dr. Carl Seiler.

Match-Making and Hygiene in France.

Of late years cases of phosphoric necrosis requiring surgical treatment have become relatively infrequent in the various French establishments devoted to match-making,—two in 1890, none in

1891, three in 1892, seven in 1893, and three in 1894. Since 1894 every workman presenting the slightest sign of phosphoric poisoning is reported by the medical attendant as affected with incipient necrosis. The sufferer is then at once removed to a distance from the factory and subjected to appropriate treatment, for the most part in the open air, until the absorbed phosphorus has been eliminated. During this period, and pending complete convalescence, the patient receives an allowance for his family. In 1894 fourteen workmen, of whom thirteen came from the factory at Pantin, were found to be more or less affected; but during the first ten months of 1895 the number rose to twenty-five, no fewer than twenty-four being employed in the above-mentioned establishment. The amount expended on sanitary improvements, in workshops and the provision of hygienic appliances, together with the overgrowing allocations to industrial institutes, has now attained to the grand total of 1,200,000 francs.

A Valuable Reminder.

A small church was sadly in need of general repairs, and a meeting was being held in it with a view to raising funds for that purpose. The minister having said that to do the work thoroughly \$500 would be required, a very wealthy (and equally stingy) member of the congregation rose and said he would give one dollar to the list.

Just as he sat down, however, a lump of plaster fell from the ceiling and hit him on the head, whereupon he rose up hastily and called out that he had made a mistake; he would give \$50. This was too much for an enthusiast present, who, forgetful of everything, called out fervently,—

“Oh, Lord, hit him again!”

Plants Growing under the Microscope.

This is something that we read of in most books on the microscope, and, although it is not by any means true plant growth, it is very curious and beautiful. Procure a little *collomia* seed, which may be had from seedsmen. Take one of the seeds, and, with a razor or very sharp knife, cut off a very thin slice. Lay this slice on a slip of glass (an ordinary slide), cover it with a thin glass cover, and, the microscope being in a vertical

position, lay it on the stage. If you wish to incline the microscope, you must use a square glass cover and not a round one, and hold the cover to its place by means of a very fine rubber ring. Now, bring the thin slice of seed into focus, and then apply a drop of water to the edge of the glass. The water will penetrate between the glasses and moisten the seed, which will at once throw out a very large number of spiral fibres, giving it the appearance of veritable germination. Beginners will find it easier to perform this experiment if one will apply the water while the other looks through the instrument. A single drop is enough.

Appropriate Diseases.

The coal-dealer died of colitis,
 The twine-maker had the cord-ee,
 The farmer's attack of oat-itis
 And rye-neck was painful to see ;
 The wheelman went blind with cyclitis,
 The bridge-builder suffered from piles,
 The servant girl had Sal-pingitis,
 And the cook was all covered in biles.

—*Southern Medical Record.*

Long-Lived Americans.

This Western Hemisphere has many sorts of climate, but they all have in common this encouragement, in exceptional cases it is true, to great age. It has been supposed that the exceedingly variable and violent climate of some regions of our country is hostile to long life. But if we study the matter in view of multitudes of instances, we see that it is not climate, or even hardship, that shortens life in the United States, for instance, but that it is worry and care, or, in other words, the furious pace at which we try to live. No attempt is made to defend the climate of New England, and yet the number of people who have attained a great age in it is positive proof that the climate is not altogether in fault for mortality. It is probable that the record would be very different if we paid as much unworried attention to growing old as we have to fighting Indians, subduing forests, making money, and getting ahead of our neighbors. We are still as a nation very young, some physical conditions have been against us, and there has not yet been time

enough to spare to show what the country can do for us in the way of longevity. In New England there are less than three lives from the landing of the Pilgrims. Among the Pilgrim records at Plymouth is a letter from Peregrine White, who was born on the "Mayflower" when it lay in Provincetown,—the first white child born in New England. Following that is a letter from an estimable Pilgrim deacon, who lived to be 106 years old, and who testifies that he knew Peregrine White. Following this is a letter from a lady still living, at the age of 92, who says that she remembers the aged deacon of 106 years. Thus less than three lives take us back to the landing and to the Rock, which is almost as mysterious as the aerolite, or black stone, in the Kaaba at Mecca, since it is like no other piece of granite on the Massachusetts coast. It may be mortifying to see that we as a nation have no greater antiquity than this, but the efforts of three persons to cover it is encouraging.

But it is in other regions of the continent that we must at present look for the extraordinary capacity of the New World for producing old people. Well authenticated are cases of Mission Indians in Southern California, who reached the ages of 120, 130, and 140 years. In that equable region all the great functions of nature go on with regularity, so as to induce a long running of the machine. But besides this, these old men were probably free from care, from religious doubts and scepticism, and political worry and ambition, and it is testified that they were simple in their habits, temperate, and even abstemious, drinking only water and eating but little corn, which they fitted for digestion by the vigorous action of their own grinders. Lieutenant Gibbons found in a village in Peru 100 persons over the age of 100, and either he or another credible explorer there reports another man aged 140. He was a very temperate man, ate his food cold, and never ate meat except in the middle of the day. In the highlands of South America the habit of old age is a long-established one. In Ecuador centenarians are common. The census of 1864 found in the town of Pilaguin, 11,000 feet above sea-level, about 2000 inhabitants, among whom were 100 over 70 years of age, 30 who were 115. Not many years ago there were about 80, 11 over 90, 5 over 100, and 1 died in Ambato, a woman named N. Cucalou, who was 114, and one Don Jose Sota, aged 120. In the year 1840, in the town of Banos, died old Morales, a vigorous carpenter to the end of his life, who was well on in years

and the steward of the Jesuits when they were expelled from their property in 1767. In 1838 a witness in a judicial trial was proved to be 140 years old, having been born on the night of the great earthquake which destroyed the old town of Ambato in 1698. How much longer this man lived, who was cradled by an earthquake, is not yet reported. Mexico, notwithstanding its revolutions, is equally favorable to longevity. In the State of Vera Cruz there died a man in 1893 who was 137 years old. That he was carried off prematurely we have reason to suppose, for at Teluca, where register is officially and carefully kept, there died only a few years ago a man aged 192.—*Harper's Magazine*.

Diphtheria from a Lock of Hair.

On June 29 was called to a case of well-developed diphtheria, the victim being a young woman 24 years of age, writes Dr. Charles E. Young, of White Plains, N. Y., to the *Daily Lancet*. Upon investigation she could recall no exposure to the disease, but after a moment's thought answered, "unless it came from a lock of hair." She then went on to detail how a certain child died with diphtheria a year ago, and a lock of hair was clipped from the child's head, wrapped in paper and enclosed in a box, which had been placed in a bureau-drawer. In rearranging the drawer this young woman came upon the box, and, taking out the lock of hair, contemplated it for some time, then put it carefully away again. Next day her throat began to trouble her, and upon the following day I saw her. Fortunately treatment controlled the disease before general systemic disturbances had progressed very far, and she has recovered. Needless to write, the lock of hair was consigned to the flames.

The Average Man.

If you are merely an average man don't fret about it, but look on the bright side of the picture. The average man is a lucky man. He will go through life easily, with less friction, with more pleasure, and less annoyance than the man who is above or below the average. Everything made in quantity is made to fit the average man. A door-knob is placed where it is most handy to a man of average height. A letter-box is put

up so that the average man can mail his letters with the least difficulty. Car-straps hang down far enough for the average man to clutch them with the least effort. Car-steps are placed so that the average man can get in and out of a street-car easily. Clothing of every description is made to fit the average man. And it is the same in other ways. The man of average intelligence, average brain power, average schooling, average morality, and average religious ideas will get along in the world better than men more highly gifted. Men above the average have added responsibilities thrust upon them. More is expected of them. They are supposed to keep up a fast gait, and if they do not the world finds fault with them. The average citizen, average husband, average father, average man is happy because he is inconspicuous. He goes along unnoticed, as he is neither a fool nor a genius; he attracts no attention and finds ten times more solid pleasure in life than those who possess more brilliant qualities. You see the average man is a well-balanced man, and balance means stability, and stability means rest.

The Meaning of Lost Appetite.

A child's appetite is a great test of the state of his health. As long as he takes his meals regularly, eats eagerly, and takes a fair quantity of nourishment, there is little or nothing the matter, and other symptoms of ill-health are of comparatively small importance. A healthy appetite leads a child to show signs of enjoyment of the food set before him. It is encouraged by muscular and mental exercise, by contentment, by regularity in the times of meals, by the use of plain food only, and by varying the food in a greater or less degree according to the age of the child. Food eaten with a relish is much better digested, and, therefore, more nourishing, than that which is simply forced into the stomach, and it is a great mistake to insist upon children eating when they show a marked disinclination for food.

Hunger and appetite must not be regarded as exactly the same thing. Hunger is a craving of every tissue of the body for some material which will nourish it, and it is expressed by a curious sinking sensation in the stomach, and a longing for food. Appetite is less physical than mental, and watches over the functions of the stomach, observes all that is presented for

entrance, and rejects what is injurious or distasteful. An unspoiled appetite is a perfect guide as to the quality and quantity of food to be taken, but it may easily be destroyed by over-indulgence or bad habits, such as giving too much or too little food, administering it too frequently, giving foods that are too rich, too stimulating, or unsuitable to the age of the child, and by irregularity in the meal times.

Inordinate hunger is often found when food has been given that is not well adapted to the young digestion, as in this case the child, although a quantity of food has been taken, cannot assimilate it, and is really being starved. In older children and adults, inordinate hunger sometimes arises from gastric irritation, and will often lead to more food being taken than is necessary, a condition of affairs which will further increase the trouble.

Loss of appetite is found in children of feverish condition, as a precursor of fevers and other ill-health, and in acute disorders of the stomach. If a child takes his food badly, something is sure to be wrong, and it is necessary to ascertain the cause. If it is an infant that is teething, ascertain whether the gums require lancing. If not, before doing anything further, give a dose of fluid magnesia. Sometimes lack of fresh air is the cause of loss of appetite, and the child should be carried out into the air for lengthened periods. The bottle should be given at longer intervals, and it may be desirable to change the food given, as sometimes one food palls upon a child that will immediately take another.

In hot climates and in India loss of appetite often means the approach or presence of a fever, and then to insist upon food would be a great mistake. A drink of pure, fresh water should be given occasionally, and a little magnesia will do no harm. If there is constipation, a dose of compound rhubarb powder and gray powder will often put matters quite to rights, the dose being proportioned to the age of the child; but in India small doses of calomel may be used instead of gray powder, which will not stand the climate.

Plenty of air and exercise, and the judicious administration of aperients, if necessary, are most valuable in all cases of loss of appetite occurring without other signs of disease, but, of course, if any disease is apparent, this must be treated on its own merits.

Although variety in diet is important even as early as from the age of 9 months, it becomes more so for the growing child, and loss of appetite, with consequent ill-health, often follows a monotonous sameness of diet. Bread and milk, boiled mutton, suet puddings, bread and butter, and marmalade for breakfast, dinner and tea, are all excellent things of their kind, but when they're given three times a week, or even oftener, as I have known, they become positively nauseating.—*Home Notes.*

On the Management of the Tuberculous at Hotels.

The Pennsylvania Society for the Prevention of Tuberculosis, under the presidency of Dr. Lawrence F. Flick, has published some circulars of information for gratuitous distribution. The third tract of the series treats of the duties of hotel-keepers in relation to their infected and non-infected guests. Among the points brought out are the following: The linen, etc., of consumptives should be washed separately and should always be well boiled before being washed. The persons to whom such articles are given to wash should be properly instructed as to what to do in order that they too may be protected. As far as practicable, consumptives in the advanced stage of the disease should be assigned to separated tables, in order that their tableware and linen can be kept apart from those of the other tables and washed separately. All such tableware should be boiled before washing.

“All parts of a hotel or boarding-house which are likely to be frequented by consumptive guests should be well supplied with cuspidors in which there should be at all times a germicidal fluid. This fluid should be changed once a day and the cuspidors should be thoroughly scalded with boiling water. In conspicuous places throughout the house and especially in the rooms assigned to consumptive guests there should be notices requesting guests never to eject sputa into any place other than the cuspidor, and suggesting that a handkerchief should never under any circumstances be used for the reception of such sputa where a spittoon is at hand. When out upon the lawn or in any place where a cuspidor is not of convenient access, the sputa should be ejected into paper handkerchiefs, these to be placed, upon returning to the room, in a receptacle furnished for that purpose; such handkerchiefs should not be thrown into the ash-bin but burned by

the chambermaid. After a room has been occupied by a consumptive, it should be carefully cleansed before another guest is assigned. Where the rules already laid down have been observed, wiping the walls, floor, and furniture with a sponge dampened with a germicide solution, whisking the rugs with the same solution and sending the sheets, blankets, and pillow-cases and counterpanes to the laundry, will be all that is necessary. Where, however, no care has been observed and the consumptive has been careless about spitting on the floor or into linen, silk, and muslin handkerchiefs, or where the bed-clothing has been visibly soiled with broken down tubercular tissue, it will be necessary to carefully rub the walls with fresh bread and then wash them with a strong germicide solution, to wash the floors and furniture with the same strong solution, to have all the bed linen and blankets thoroughly boiled and to have the rugs and other articles which can neither be subjected to strong germicide solution nor boiled, sent to a renovating place and steamed."

Celery.

Now that celery is with us the following will be read with interest :

The common celery is a native of Great Britain. In its wild state it has a strong disagreeable taste and smell, and is known as smallage. By cultivation it becomes more mild and sweet. It is usually eaten uncooked as a salad herb, or introduced into soups as a flavoring. In its raw state it is difficult of digestion.

Celery from the market may be kept fresh for some time by wrapping the bunches in brown paper, sprinkling them with water, then wrapping them in a damp cloth and putting in some cool, dark place.

Celery Salad.—Break the stems apart, cut off all green portions, and after washing well put in cold water for an hour or so before serving.

Stewed Celery.—Cut the tender inner parts of celery heads into pieces about a finger long. The outer and more fibrous stalks may be saved to season soups. Put in a stew-pan and add sufficient water to cover ; then cover the pan closely, and set it where it will just simmer for an hour, or until the celery is perfectly tender. When cooked add a pint of rich milk, part cream if

you have it, salt to taste, and when boiling, stir in a tablespoonful of flour rubbed smooth in a little milk. Boil up once and serve.

Stewed Celery No. 2.—Cut the white part of fine heads of celery into small pieces, blanch in boiling water, turn into a colander, and drain. Heat a cup and a half of milk to boiling in a stew-pan; add the celery, and stew gently until tender. Remove the celery with a skimmer, and stir into the milk the beaten yolks of two eggs and one-half cup of cream. Cook until thickened; pour over the celery and serve.

Celery with Tomato Sauce.—Prepare the celery as in the preceding *recipe*, and cook until tender in a small quantity of boiling water. Drain in a colander, and for three cups of stewed celery prepare a sauce with a pint of stewed tomato, heated to boiling and thickened with a tablespoonful of flour rubbed smooth in a little cold water. If desired, add a half cup of thin cream. Turn over the celery and serve hot.

Celery and Potato Hash.—To three cups of cold boiled or baked potato, chopped rather fine, add one cup of cooked celery, minced. Put into a shallow saucepan with cream enough to moisten well, and salt to season. Heat to boiling, tossing and stirring so that the whole will be heated throughout, and serve hot.—Mrs. E. E. Kellogg, in *Science in the Kitchen*.

Horace Greeley's Dietary.

Mr. Moses P. Handy, writing for the Chicago *Inter Ocean*, says, "Horace Greeley's stories being in order, in view of the unveiling of his statue some time since, I will tell one that I heard in New Orleans. The genial old philanthropist went there, and the people were anxious to show him every attention in their power. A dinner seemed to be the proper thing, and the markets of New Orleans, than which there are few better in the world, were ransacked to make the occasion as notable for its viands as for the distinction of the guest and the diners. Judge Walker, the veteran editor of the *Picayune*, presided; he was a great gormand, and after the manner of gormands, wished none of the fine points of the dinner to be lost to the guest for lack of commentary. 'Mr. Greeley,' said he, 'these oysters are the best that come to our market, and we think they vie with those of Norfolk. I observe that you are not eating them.' 'Well, no,' replied

Greeley ; 'the truth is, I never could abide shell-fish.' Then came some delicious green-turtle soup, which Judge Walker explained was prepared from the finest fat turtle the Florida bays could afford. 'No doubt, no doubt,' was the reply, in Greeley's peculiar whine, 'but cold-blooded animals are an abomination to me.' The pampane, imperial fish that it is, and fresh from the gulf, was open to the same objection, despite Judge Walker's eulogy, and that too was ignored. Mr. Greeley barely tasted the accompanying Parisian dainty, and shook his head ruefully at the idea that anybody should impair his digestion by eating cucumbers. Shrimp salad, another New Orleans delicacy, proved no more tempting ; shrimps, he said, looked so much like worms that they always gave him the creeps. 'Ah, here is something you will like,—a homely dish in name,' said Judge Walker, 'but fit for the gods. It is a Galicia ham.' And then he went on to tell how the hogs from which these hams were obtained were fed only on chestnuts, making the flesh luscious and delicious. 'Perhaps so, very interesting indeed,' observed Greeley ; 'but do you know, Judge, that there is so much talk of trichniæ, nowadays, that I wouldn't dare taste a bit of pork.' The Judge gave up in despair. The only thing in all the array of dainties which had been provided which Mr. Greeley would eat were bread, potatoes, and cauliflower, and he feared that he might be overloading his stomach at that. But when it came to the speaking, although he had drunk nothing but cold water, he spoke as one inspired, and with a fervor, eloquence, and tenderness that nobody at the table could ever forget."

Shell-Fish.

"A cold soft-shell crab, a plate of strawberries, and a cup of iced-tea" was the lunch recently ordered by a man who sat next to us in the station restaurant of the Pennsylvania Railroad at Jersey City, and who looked as if he ought to have had sense enough to order a beefsteak or some roast beef, or some other equally simple dish.

We have no quarrel with soft-shell crabs ; they are mighty good, and we are always ready to eat them when we have had a previous living acquaintance with them ; that is to say, when we know that they are fresh, when we have seen them alive a couple of hours before we eat them, but we have no patience with the

man or woman, with gray hair and facial wrinkles, who has not learned the wisdom of not ordering fancy dishes in strange restaurants. A residence at the sea-shore has convinced us that fish should be eaten within a few hours after they have been caught, that we may derive the most wholesome nourishment therefrom, and that with shell-fish, they become absolutely unwholesome within a very few hours after life has departed from them.

Old Professor Carson used to tell us boys at the university that there was only one way to be absolutely sure of getting pure Madeira wine: to go to the island of Madeira; buy some land; plant your vines; watch them night and day; pick the grapes; press the juice; watch it ferment; put it into a keg; drive the bung; get astride of the keg and sail it home.

So say we of shell fish; the only way to be absolutely sure that you have them fresh is to catch them yourself.

Long Life and How to Have It.

Recently ex-Secretary of the Navy Thompson, of Indiana, celebrated his 87th birthday. He went to the Republican National Convention at St. Louis as the head of the delegation from his State. He has been in public life for over sixty years. As far back as 1840, when the elder Harrison ran for President, Mr. Thompson was an elector on the Whig ticket, and he has participated in every national campaign since that time. He has known sixteen Presidents and has written instructively about them and has given the public other informatory books. He is six months older than Gladstone and six years older than Bismarck, but while both these men are retired Mr. Thompson is still hale and hearty and able and eager to take an active part in the hurly-burly of electing another President.

Mr. Thompson gave the secret of his long and active life and robust health when he said, "I never dissipated." He was endowed with a good constitution, but that would have quickly broken down had he not early adopted good habits of living and persevered in them all his life. This is one of the hardest lessons men have to learn, and in failing to learn it appears the chief weakness of their lifetime. Health is a certain stock of physical vitality given to every person, which can be increased or diminished according as a person lives. It might be compared to a reservoir given full to a person at birth and capable of containing

a fixed amount of water. Into this reservoir so much water runs and from it so much is drawn off each day. It is plain that if more water is taken from it than runs in the original supply must be gradually diminished until the reservoir is empty.

And yet a great majority of young men start out in life as if their reservoir of health was unlimited in capacity and able to respond to any drafts upon it. A dissipation here and there is apparently quickly recovered from, and a long-continued bad habit, such as overeating, seems to cause only an occasional harmful effect. Physical strength appears to be elastic and to readily spring back after each overtax with only a slight revolt. And yet every one of these overdrafts draws down the stock of health in the reservoir just so far, and if continued the reservoir is finally exhausted, and then life is sustained only by the amount of vitality produced each day. This leaves a man with no reserve stock of health to withstand the attacks of disease, which are only extra calls upon the vital resources, and if the call is beyond the temporary supply of vitality life stops for lack of sustenance.

This is the simple story of what many consider an unfathomable mystery of nature. There are cases where no human care or foresight can avail, but in a great majority of instances health and long life are the result of the application of simple rules of living, of studying one's own wants and needs and adapting habits to them. Hear what "Uncle Dick" Thompson says: "For years," he said, "I could eat a brickbat and digest it, but that does not mean that I put indigestible food in my stomach. On the contrary, I always avoided that which I knew was hard to digest. In my several experiences in Washington life I learned that many able men with bright futures were ruined by the high living indulged in there. Their health was either impaired or they acquired bad habits which turned their careers from usefulness to dissipation. Therefore, I never adopted the Washington manner of living."

The "Washington manner of living" can be taken as a just term to express the manner by which the lives of hundreds of public men have either been snuffed out or the usefulness of their owners has been cut short. The same manner of living has destroyed and is destroying millions of lives to-day. Nature's laws are inexorable. She cannot be cheated. She will demand her pound of flesh and the debt will have to be paid, even if in paying it life must be sacrificed. There is no mystery about long

life. It is as simple as a sum in arithmetic, and if rightly trained any child should be able to work out the proposition.—*Philadelphia Press*.

The Value of a College Training.

The return of the annual college commencement season tends to renew the agitation of the old question, "What is college good for?"

"It is not entirely safe to claim that every kind of success, even of legitimate success, will be promoted by a college training," writes the Rev. Charles H. Parkhurst, D.D., in the *Ladies' Home Journal*. "If I had a boy for whom it was my supreme ambition that he should become rich, I should not send him to college. So far from helping his prospects in that direction it would probably damage them. Money-making is a trick. The easy acquisition of it is a knack. It involves the condensation of interest and faculty along a particular line, and that a narrow line. There is nothing to hinder a very small man from being a very wealthy one. Shrewdness does not imply big-mindedness. I might say with a good deal of assurance that it implies the contrary. And shrewdness has more than anything else to do with the acquisition of gain. . . . There are a great many things which can be best done by the man who does not know too much, or, at least, by the man whose intelligence is concentrated at a single point or along a single line. The mechanic who has come to be known among us as the 'wizard' would, perhaps, have been more of a man if he had gone to Harvard, but it would probably have spoiled him as a 'wizard.' Genius is presumably always a species of mania, and liable, therefore, to become something very ordinary if successfully subjected to the processes of the asylum. They had better be kept away from college if the design is to make them experts. College will be able to give them a character of 'all-roundness,' but a knife cannot be round and sharp at the same time; neither can a boy. . . . If we are going to do large intelligent work, the prime condition is the possession of an intellect trained and stocked in the same general and comprehensive way. College training is simply the process of intellectually getting ready, not getting ready for this, that, or the other specific mental service, but simply getting ready,—planting down a broad foundation of preliminary big enough to support any breadth or height of super-

structure that there may be need or opportunity to put upon it. The college course and the requisite preparatory training costs about seven years of the best and most possible periods of a man's life. But if a young man hopes to do a large, solid work in the world, a work in which intelligence of a broad kind is to play any considerable part, and there is no antecedent obstacle in the way, he makes an irreversible mistake if he considers seven years too much to pay for a liberal education."—*Review of Reviews*.

The Alleged Frequency of Insanity among Farmers.

A homœopathic alienist down East has the credit of making the suggestion that early rising is a potent cause of insanity and is accountable for the undue prevalence of that disorder among the farming community, who are notoriously given to the practice that the old nursery rhyme so mistakenly says makes one "healthy, wealthy and wise." The suggestion contains two propositions, apart from that that early rising is bad for the mental health, viz., that agriculturists are especially liable to insanity, and that this liability is largely due to this especial cause. It is probable that most of us are not very zealous to prove the healthfulness of early rising; we are largely inclined to consider it rather as a necessary evil altogether aside from its unsanitary aspects, and the doctor's theory will be an acceptable one to a large majority. Whether it is well founded or not need not here be seriously argued, but if it has no better foundation than the assumed greater prevalence of insanity in rural than in urban communities, it cannot be said to be well supported. The statistics of American, and for that matter of foreign, asylums all indicate that the ratio of the insane to the population is far greater in the larger towns than in small ones or in country districts. Thus Dr. E. B. Lane found, in discussing the Massachusetts statistics, that the proportion of insanity was twice as great in the city of Boston as it was in the small villages and rural districts, and that the ratio in the smaller cities was also greater, though less in the metropolis of the State. Massachusetts is, however, so little of an agricultural State that it may be objected that its data hardly fairly represent the true ratio, and it is as well to take the statistics of those institutions that draw their inmates largely from a

farming community. There are some of these that carefully classify their admissions, according to occupations, as well as according to rural or urban residence, and these afford some data for estimating the relative frequency of mental disorders in the agricultural population. Assuming these to be reliable, and there is no good reason for doubting them, we find that even in a State like Iowa, covering a period of over thirty years, during a large part of which the proportion of urban population was small, and which is yet very largely an agricultural community, the farmers and farm-hands furnished less than a third of the insane male inmates of the chief asylum of the State. If we take other similar regions the testimony is the same, and when the wives and daughters of farmers are specified as such, their ratio in the asylums is not disproportionate to that of the males. In fact, the statistics that are available indicate that the exact reverse of the popular notion—for such it seems to be—is the truth. Physical and mental degeneracy are more of the characteristics of crowded centres of population than they are of the comparatively healthy country districts. The general mental and physical sanitary conditions in country dwellings and their surroundings are often bad enough, but there is not the concentration of untoward influences that exists in the cities, and the result is the better for the race. It would not seem needful to point out or emphasize these facts but for the notion that seems to be largely abroad that farmers are especially liable to insanity. It is not a teaching of the psychological manuals and monographs, nor is it held to any extent by those who from practical experience and study are the best able to estimate the causes of mental disease. A number of years ago a prominent asylum superintendent called attention to the monotonous and laborious lives of farmers' wives as conducing to insanity of certain kinds, but he probably did not intend to convey the idea that they furnished any extremely large proportion of the insane. His statements, however, were reproduced and commented upon again and again in the lay journals, and it is to this in all probability that we owe the rather widespread delusion, for such it has come to be, which has been noted above. The increase of insanity in this and in other countries at the present time goes parallel with the increase of urban population at the expense of the country districts, and there is no valid evidence that agricultural pursuits and country life are in any way in themselves expressly conducive to mental disease. The belief that

this—the expression of which we see from time to time in the lay press and even, as above indicated, occasionally in medical journals—is due to the misunderstanding and misapplication of what was at best only a partial and rather one-sided observation, which may have been correct under the particular circumstances, but which has no general or universal application.—*Journal American Medical Association.*

College Training.

In the *Minnesota Magazine*, published by the students of the University of Minnesota, appears an article by the president of that institution, Cyrus Northrop, on "The Manly Man." President Northrop does not hesitate to say plainly that it is not the knowledge the student gets from the books prescribed in the college course that gives him any special advantage in his life-work :

"Perhaps I shall astonish some of you, and more likely I shall astonish your friends when I say to you, as I do now, that of all the good things which I suppose you have gained at college, I value least the knowledge which you have got from books and recitations. And yet your main business here has been, and rightly so, to get knowledge. In a certain sense, knowledge is power. Knowledge, therefore, got from books is not to be despised. But to you at your age the knowledge is not so valuable as the getting of it. Said a great philosopher, 'If God were to give me the choice between truth and the search for truth, I would choose the latter.' It would be a wise choice. What a man needs to get at college is not a supply of knowledge that will last him during life,—for he really uses in a direct way but very little of the knowledge that he gets at school,—and quite likely ten years hence very few could pass the examinations which you are now able to master. But in the getting of this knowledge your minds have been disciplined and you have become their masters,—so that whether in the future you are to pursue your studies further or are merely to deal with the world's practical business, you will be equal to the occasion,—will be cool, calm, resolute, judicious, and invincible. And if you have got out of your college days and work what you ought to have got, it is just this,—the power to meet and overcome the difficulties of life and to avail yourself of the opportunities of life, whether or not you

can explain years hence the intricacies of classical mythology or of human history, or of the genera and species of nature's children as accurately as you could once in the class-room. The important question is not whether you have inflated yourself with knowledge, but whether you have grown by that which you have fed upon. Of all things deliver me from the scholastic dude, who is not a sufficiently vigorous scholar to have a creative mind, but who is so crammed and weighted with the fruits of other men's scholarship as to have no freedom of action in his own independent manhood."

Measles a Dangerous Disease.

There is quite a prevalent but erroneous idea that measles is not a dangerous disease, and hence but little effort is made to restrict its spread in most localities. However, in England and some American States, statistics have shown the magnitude of the danger resulting from this opinion and neglect, and also the great benefit following the application to this disease of the preventive measures generally used against other communicable diseases.

The Michigan State Board of Health has taken the lead in this important field of State preventive medicine. This it is enabled to do, because for years that State has enforced a thorough system of gathering vital statistics, which is placed at the disposal of its health board; which also is furnished with a large clerical force, and means of communicating with every neighborhood in the State, and of insuring compliance with its rules and regulations.

The Michigan State Board of Health classes measles with "diseases dangerous to the public health," and which must be restricted under the law because it is a communicable disease, and, therefore, preventable; because it occasions a large number of deaths each year in Michigan, and causes several thousands of cases of sickness each year. Also it frequently injures or destroys the organs of sight or hearing. It prepares the way for, and is closely followed by, pneumonia and consumption. In England, where it is very prevalent, it destroys more lives than diphtheria and scarlet fever combined.

By reference to the voluminous and elaborate reports of the Michigan State Board of Health for thirteen years inclusive, it will be seen that great labor has been bestowed upon the pre-

vention of measles, and with marked beneficial results. In the latest (or twenty-third annual report), attention is called to two erroneous and very harmful results, to wit : That measles cannot ultimately be escaped any more than teething, and that the least dangerous time for persons to have the disease is while quite young children. The carefully-studied statistics of Michigan demonstrate that measles is a preventable disease, and that it is more fatal to children under 10 years of age than to older persons.

Doubtless, if Tennessee had such a system for collecting vital statistics as Michigan has, and if like study was bestowed upon the hitherto underrated disease, measles, the same fact would be apparent here. Beyond question the medical profession in Tennessee and many other localities has been too careless in this regard, and should hereafter profit by the long and patient efforts of Dr. H. B. Baker to wake us up.—*Tennessee State Board of Health Bulletin.*

Diet of Prospective Mothers.

No doubt the discomforts and pains of pregnancy and child-bearing are greatly aggravated by improper diet. A writer in a French medical journal offers these suggestions :

An excess of water and albuminous food should be avoided, water, on account of its tendency to produce hydroamnion, and albumen, because it favors excessive growth of the child.

The following is the diet prescribed, which has been tried in a number of cases :

Meat once a day, green vegetables and potatoes ; avoid eggs, peas, and beans, as they are too rich in albumen. The advantages claimed for this regimen are :

(1) The patients are active until the eve of their accouchement ; they do not suffer from a sensation of fulness, excessive formation of fat, thirst, or constipation.

(2) Rapid and easy delivery, even in those cases in which the previous labors have been prolonged and difficult.

(3) There is never an excess of liquor amnii.

(4) All of the women thus dieted have nursed their babies. The quantity and quality of the milk were always good. The children were small, but healthy and well-formed. They averaged about six pounds in weight.—*Healthy Home.*

Concentrated Milk.

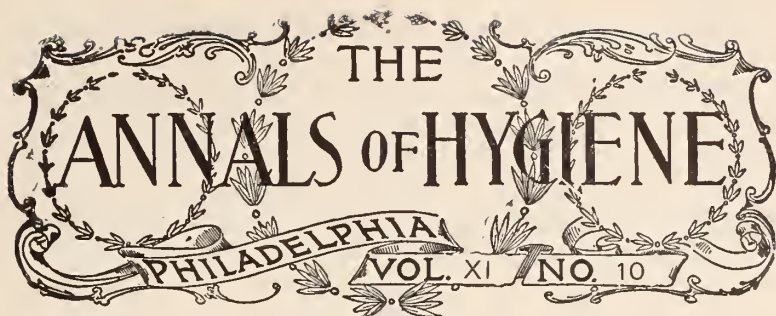
A writer in the *British Medical Journal* has called attention to the value of concentrated milk in certain forms of diarrhœa and in wasting disease, and especially in cases in which the patient is unable to take other nourishment, and cannot take a sufficient amount of milk in its ordinary diluted form to meet the demands of the body. Concentrated milk is prepared by evaporating the milk in a porcelain dish over some suitable heating apparatus, care being taken to see that the liquid does not boil and to stir it continually. By this means cream is prevented from rising, and the evaporation is not delayed by the formation of a scum over the surface. With proper apparatus and attention milk may be reduced to one-half its volume in one hour.

Scurvy in Infants.

From an interesting paper read before the Medical Society of Victoria, by Dr. A. J. Wood it would appear that scurvy is not at all an uncommon affection of Australian children, though not always recognized as such. He records seven cases in his own practice, and in most the food was either condensed milk or concentrated or sterilized milk. In one case fresh milk was given, but in a very diluted form. The prolonged heating of condensed, concentrated, and sterilized milk destroys its anti-scorbutic properties. All the cases quickly recovered when given fresh foods, fresh milk, and meat juices.

Sewer-Gas and Typhoid Fever.

Dr. Alessi has been conducting some experiments upon the effects of sewer-gas on typhoid fever. The rats, rabbits, and guinea-pigs used, when exposed to the inhalation of sewer-gas, became so predisposed to infection that a small loss of an almost harmless cultivation of typhoid germs killed them. The animals not so exposed rallied from the same, and even far larger doses. Long-continued exposure to the sewer-gas was apparently much less dangerous than a short exposure. They evidently became used to the gas, so that the effect was less pronounced.—*Exchange*.



COMMUNICATIONS.

On the Cholera Epidemic in Moji, Japan, in the Twenty-eighth Year of Meiji.¹

BY W. F. ARNOLD, M.D.,
United States Navy.

THE following pages are a literal translation of a report that was prepared for me by the chief of police of Moji, a comparatively new city on the Island of Kiushiu, just inside the Strait of Shimonoséki from its inland sea end. It is the terminus of the railroad whose company's public-spiritedness is referred to herein-after ; and its commercial importance is very considerable.

I visited it in the course of some investigations that I made under a detail upon special service from the Navy Department of the United States in December, 1895 ; and this report was voluntarily prepared for me by the official mentioned, whose personal history I did not inquire into at the time, and which I was unable to get afterwards.

It is submitted in the belief, in the light of my experience with many such officials in Japan in the course of the detail of duty referred to, that it is fairly representative of the work done

¹ Following the Chinese method of designating each emperor's reign by a descriptive name, which sets forth characteristics desired. *Meiji* ("Enlightened Rule") has been applied to the period of Japan's present ruler with perhaps the greatest truthfulness ever attained in this system of chronological predictions. Indeed, it may well be doubted whether the whole literature of prophecy contains a better example of fulfilment. Anno Domini 1895 is designated in this case.

in general by that altogether admirable body of men, the national police of Japan.

All parenthetical explanations and all foot-notes have been inserted by me. The translation is by Dr. A. Nakagawa, Tokio, Japan.—W. F. A.

The cholera cases in Moji, from its first appearance on March 8 until its last on November 1,—that is, in a period of 239 days,—were as many as 412. An average will give 1.7 *per diem*.

The entire number of houses in Moji is 2720, of which one-eighth have furnished cases (literally, "are diseased houses"); 271 houses furnished, each, 1 case; 37, 2 cases; 13, 3 cases; and 14, 4 cases.

Considered with reference to the population, which is 18,831, there will be one case of cholera for forty-five persons.

(A classification according to the streets of the town is omitted.)

Surely in producing so much disease, extinguishing so many precious lives, and demolishing so much property, there must have been circumstances to account for everything.

A man—Matsutaro Yamabe—that lived temporarily in this town, by the occupation of a daily laborer, became a daily laborer in the employment of the commissary department of the Imperial Japanese army at Bakwan (the commonest Japanese name for Shimonoséki, which is also called Amanagaséki, meaning, "The Red Horse Barrier"), and was working at loading and unloading the vessels returning from China and carrying army people and coolies on board them.

On March 7 he came near a person aboard a ship who was suffering from severe vomiting and diarrhœa, and his spirit at once felt very unpleasant. On the morrow—the 8th—he went back to his home and was suddenly seized with vomiting and diarrhœa. After two days of illness he died. This is truly the alpha of cholera cases in this town.

From that day to the 18th day of this month there were seventeen people who got sick of this same disease. But at that time, as the season was not regarded as the cholera season, and as the town's doctors did not diagnose it as cholera, merely hastily reporting the cases as infectious, the chief of Kokura Hospital was summoned by telegram and sent to make the diagnosis. He reported that it would be hard to determine its real

nature without autopsies, but that he was certain as to the infectious nature of the affection.

At last, the director and vice-director of the Fukuoka Hospital were despatched ; they performed autopsies upon two bodies and diagnosed them to be genuine cholera cases.

Upon this the patients were removed to the cholera hospital ; isolation was enforced ; disinfection was carried to its utmost extent to prevent further spread of the virus ; and the vigilance of the police force was fully aroused.

At this time the arrival (at Shimonoséki, just across the strait of this name) of the Peace Embassy from China occasioned extreme vigilance on the part of the police force of Moji, which was at that time numerous ; and from March 20 thorough municipal cleaning and disinfection in all localities was carried out ; and, on the side of individual attention, policemen were instructed to call at every house several times a day to inquire about the health of its inhabitants. If there were any cases in which doubt existed as to the nature of the disease, physicians were immediately summoned. Among other things, the closest of attention was paid to eatables.

In reward of these measures, from March 19 until April 8—twenty-one days—there was not a single case of cholera : the disease had disappeared.

The above is to be regarded as the first period of this epidemic in this city ; therefore the cholera days were eleven. Hence, 1.4 persons *per diem*.

Period II.—From April 8 to May 25,—forty-eight days,—twenty-six patients. Average, *per diem*, about 0.5 person.

The cases of this period had their origin in the ships employed in government service. About nine-tenths of the cases arose thus ; the rest were brought from infected towns, such as Hiroshima and Kuré (the chief port for transports carrying troops, and the principal naval station, respectively), and were not transmitted from cases of the first period. They are of a radically different origin.

The occupations of the patients of this period were for the most part those of coal-carrying coolies, who add to excessively hard labor habitual overeating and too great indulgence in *saké* (a mild distilled liquor produced from rice). They are almost ignorant of what constitutes personal hygiene ; and they do not know that indigestible food and bad water can occasionally be

the source of this disease. Therefore, however much one may call their attention to hygienic topics, the effect is that of the east wind upon the horse's ear;¹ and our well-intended instructions and advice are mostly thrown away on them. But sometimes their co-workers, who have been in perfect health until yesterday, are suddenly attacked (literally, "invaded") by the disease; they are laid low; symptoms are developed in due order; they become delirious; and they die in agony.

Seeing these things, it was impossible that sensations of fear should not arise; and by degrees they were brought to see that heedless eating and drinking were causative in this disease.

But their dwelling-places are very much crowded; ventilation is bad, of course; even the amount of light is insufficient; the houses are not clean either without or within; and the only water that they had to drink was bad, and must be regarded as a factor in contagion. So it was very necessary to remove the dirt, and to supply pure water, in order to protect them against infection. Consequently, not alone satisfied with cleaning that part of the town thoroughly, it was undertaken to stop the source of infection through water; and the wells that belonged to the Shioda and Iroha companies (guilds of coolie laborers) were nailed up and the use of water from them was prohibited. Of course, they were instructed to use boiled water for drinking, and also for washing utensils for food. The water from wells in the different parts of the city was examined, and those that were found to be bad were sealed up, and any use thereof was prohibited.

The Kiushiu Railroad Company supplied hot water and tea to the coolies, from May 1 onward, in localities east of Shirakizaki to Shiohama. From that date the effect became gradually apparent, and the root of the malady was severed; so that after the beginning of June all cases with the coolies are to be ascribed to personal carelessness. (A table showing the amount of hot water and tea distributed by the company at nine stations, up to September 30, is omitted. The average daily amount was 4860 gallons, costing 10 $\frac{40}{100}$ *yen* for fuel. The total amount given was 656,000 gallons to 62,265 persons. Cost 1591 *yen*, besides expenditures for buildings, which was 270 *yen*.)

¹ This is a common simile in Japanese. It is often a pure metaphor also; and a usual associate is a phrase that means "water in a frog's face." Foreigners, under the immense difficulties that the language extends to them, avail themselves readily of these phrases; and one soon comes to think that a word is less the sign of an idea in these idiographic tongues than—shall one say it?—in modern French.

Period III.—From May 27 to June 13,—eighteen days,—ninety-eight cases; 5.4 cases *per diem*.

In this period the disease was very severe, as will be seen from the fact that sixty-five out of ninety-eight cases died. In this period the virus had ramified to the four corners of the town; and from the beginning of this time downward for more than 100 days without interruption there developed many cases of cholera that sacrificed several hundred lives and destroyed (literally, “threw to crows”) a considerable amount of property. Such a state of affairs must have had an obvious cause.

Thus, on May 22, at the return of the Sixth Division (Japanese *Shidan*, the Imperial Japanese army following the German model of strictly local recruiting), there were gathered together here from all parts of the *Ken* (prefecture) persons of all conditions to welcome the troops. The city was much crowded, and the thought of personal hygiene was drowned in the voice of welcome. It so happened that the boys' festival season came around at the same time, and there was naturally much excess in eating and in drinking. In addition to these things, the virus brought home by the soldiers and coolies was directly and indirectly sown broadcast, and rekindled the at one time nearly disappearing epidemic, and urged it to attain the magnitude it reached.

Thereupon, as a first measure of prevention, the delegates from different towns and parts of the *ken* (literally, “welcome delegates”) were ordered to go back to their respective homes, except a few who were allowed to remain as the representatives of all. Influential people of the city, the hotel-keepers, and the proprietors of tea-houses and of other shops where eatables were served, were called together and instructed in the best procedures of preventing the further spread of the epidemic. Extreme vigilance was enforced by the police.

On the other hand, the coal-merchants and other rich people were asked to contribute money; and from June 12, at two stations in the old town and at another in Sakaecho, boiled-water establishments were set up, and the boiled water was given out to those who were not able to boil the water that they drank. Further, quarantine officers, police officers, town officials, and others were despatched to all parts of the city, to make open-air speeches and to advise the utmost attention. As a result of such efforts, the epidemic showed a decline after June 13. (Another

omitted table and note gives total supply 650,000 gallons, at a total cost of 1450 *yen*. It is stated that it went mostly to coolies, but it was also distributed to sailors and to others aboard ships in port.)

Period IV.—From June 13 to July 20,—thirty-eight days,—forty-eight cases ; 1.2 cases *per diem*.

The measures and efforts of the preceding period were manifest in this ; so that in this rainy season of the year only forty-eight cases occurred.

Period V.—From July 21 to September 12,—fifty-three days,—211 cases ; 4.3 cases *per diem*.

This period of fifty-three days coincided with the most fearful season of the year,—viz., the hottest part of the year. Moreover, the virus of the disease had sunk deeply into the earth, and it was very difficult to remove it.

Then the coolies came back (from China) in great numbers. Those that belonged to this *ken* alone numbered more than 2000. These people brought the virus of the disease afresh ; and directly and indirectly they contributed to the spread of the disease. Under such circumstances, it was impossible by preventive measures to stamp out the disease, and we had to be contented with limiting its spread.

During these efforts of prevention and of disinfection, there were a number of people (officials connected with the work) who were infected while in the discharge of their duties. One was a police officer ; another a policeman ; seven others were nurses, coolies, and the like. Other officials were attacked with diarrhœa ; indeed, few of them were exempt from it.

Period VI.—From September 13 to November 1,—fifty days,—eighteen cases ; 0.4 case *per diem*.

In the last part of the preceding period there had been from five to ten cases daily ; so that at any time now there were fears of recrudescence of the disease, unless some effective measures were taken against it. Otherwise we had merely to wait for the cold season to come before the epidemic should cease. Therefore it was determined to enforce thorough (literally, “big”) cleaning of the whole town, and to exterminate the virus of the disease. From the beginning of this period for a week the town was divided into fourteen wards, and seventy-five officers in all were distributed to them. Both the inside and the outside of the houses were cleaned, and the sewers and drains were fully cleared

and lime was scattered universally. Thus it was a cleaning in the sense of a disinfection.¹

Further, all hotels, tea-houses, and shops selling eatables were made to close at 10 o'clock P.M.; and elsewhere excesses in eating and drinking were prohibited. Extreme measures were enacted, as the result of which the epidemic almost entirely declined.

Since then only eighteen cases were found, which can for the most part be ascribed to careless individual habits and excesses.

From the above, it appears evident that, although direct contagion is much to be feared, the contamination of the soil and a bad water-supply are efficient factors in its spread; and that excesses in eating and in drinking are the occasions; and that without these two the contagion need not be so much feared. If in this town there were provisions for a good water-supply, the best system of drainage, and, if there were no coolies nor laborers with their ignorance, obstinacy, and inclination to great excesses, should the virus, which is a thing to be dreaded, be introduced, it could not have attained this extent and magnitude.

That such is the probability may be seen from the following tables:

TABLE I.—ETIOLOGY.

Persons coming from infected places	28
“ careless in eating and drinking	236
“ in contact with affected individuals in their houses	105
Not traceable	43

TABLE II.—OCCUPATIONS.

Coal carriers	155
Daily laborers	62
Boatmen	68
No occupation	52
Carpenters	14
Peddlers	7
Petty merchants	18
Miscellaneous laborers	27
Officials	5
Military coolies	2
Railroad official	1
Army surgeon	1

¹ The gunboat to which I was at that time attached rode out at anchor a typhoon just above Moji; and a boat that was sent ashore from her was weather-bound in that town for several days. The cleaning operations detailed puzzled the boat officer not a little; nor from his story could I understand their extensive scope at that time.

At present I have some reason to think that this gale greatly decreased the epidemic by its marked effect in lowering the temperature. This will be more fully treated elsewhere.

(A table giving places of registration is omitted.)

Report of the Moji Cholera Hospital.

The old cholera hospital in this town was imperfect in construction and too small to admit a large number. Therefore at the local expense we constructed a new hospital. This building was begun April 1 and completed on the 20th; on May 8 it was opened.

Deaths <i>en route</i> to hospital	72
“ on the day of entrance	34
“ on second day	68
“ on third “	40
“ on fourth “	14
“ on fifth “	13
“ on sixth “	13
“ on seventh “	8
“ on eighth “	2
“ on ninth “	3
“ on tenth “	1
“ on eleventh “	3
“ on twelfth “	1
“ on thirteenth day	2
“ on fourteenth “	1
“ on fifteenth “	0
“ on sixteenth “	2
“ on seventeenth “	0
“ in cases treated at home	12
“ total number in hospital	174
Recoveries	120

Those enumerated as having died on the same day in which they were brought to the hospital are not counted as having received treatment there. They were concealed until the last stage, or else they were *foudroyant* cases brought in in a moribund condition. They died immediately on being brought into the hospital; and there was no time to treat them in the strict sense of the term.

Physical Degeneration in Italy.

A Milanese writer asserts that 45 per cent. of the young men of Italy are unable to enter the military service on account of their lack of the physical requirements.—*Revista de Ciencias Medicas*, May 20.

The Largest and most Perfect Filter-Plant in the World.

BY A. G. HUMPHREY, M.D.,

Galesburg, Ill.



DAVENPORT, Iowa, has, in a large sense, solved the water-supply question for nearly all Western cities. The Davenport Water Company have constructed the largest and most perfect filter-plant in the world. It consists of ten double filter-shells, each seven and a half feet in diameter by thirty-two feet long, built of mild homogeneous steel of 60,000 pounds tensile strength, of five-eighths of an inch in thickness, which stood tight under a steady proof test of 200 pounds per square inch. The size of the filters is such that, while nominally of a capacity of 6,000,000 gallons per twenty-four hours, their actual capacity is over 7,500,000 gallons for that time. It is not only the largest, but the most expensive "mechanical filter-plant" on the face of the globe. The water company have already invested \$1,200,000 in the water-works system, comprising two well-equipped pumping-stations, the filter plant, a 5,000,000 gallon reservoir, and about thirty-seven miles of water mains.

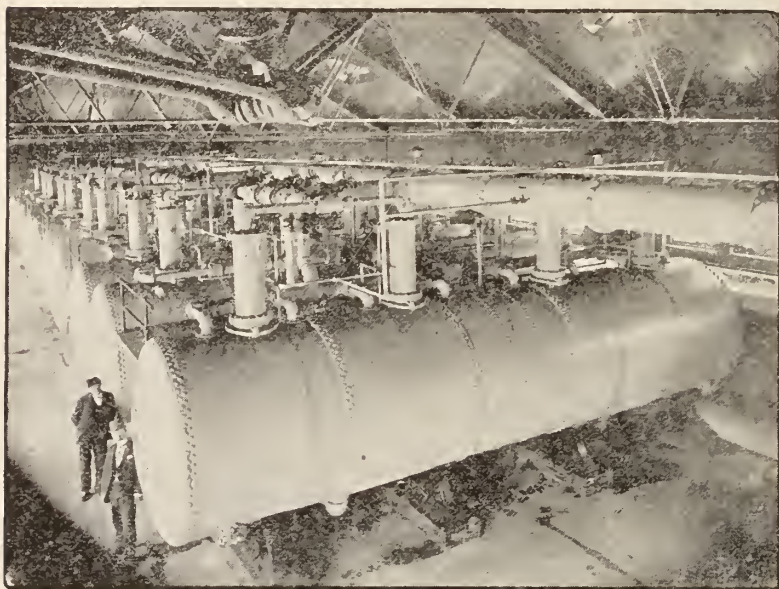
The water is delivered into the pump-wells through a tunnel built under the bed of the river to near its channel, about a mile above the government bridge and above the sewerage of the city. The water here has a current of about five miles an hour, as it rushes swiftly over the Rock Island rapids, giving it quite complete aeration, oxidation, dilution, etc., which tends to its purification.

The pump-wells are built of heavy masonry tightly cemented, and are about thirty feet deep. Between the two wells are heavy, coarse mesh-screens to screen off the fish, bark, chips, leaves, and all other *débris* from entering the pumps. From these wells, after the water has been well screened, the pumps take the water and deliver it through the great filters, under direct pressure, to the city mains and to the reservoir.

The filters are so arranged that any one of them can be operated separately, or the whole battery collectively. The filters are

about three-quarters full of white sea-sand, amounting to thirty car-loads, brought from Horn Island in the Gulf of Mexico. Each grain of this sand is a perfect crystal, rendering it a much better filter than our building sand. The water is forced by the pumps through twenty-inch feed-mains into the filters, passes down through five feet of sand, thence through a peculiar-shaped screen, made of extremely fine slits sawed through cylinders of heavy seamless tubing made of composition metal, thence out into the mains of the city.

The process renders the water when taken from the river,



VIEW OF THE FILTERS.

even at the highest floods, as bright, clear, and sparkling as spring water. The sediment and other matter which are removed from the water are retained for the time in the filters on top of the sand. To remove this quickly and thoroughly, thousands of fine powerful jets are provided at the bottom of the filters and the current of the water is reversed. This is accomplished by supplying the water to the filter through horizontal perforated arms, attached to a central vertical pipe attached to a piston, and in such a manner that by admitting the water pressure from the mains to this piston, the arms are forced downward and back

through the filtering material, applying the washing jets, each three-sixteenths of an inch in diameter, and under eighty pounds pressure to every grain of sand in the whole mass, throwing the whole into violent agitation, thus scouring the sand completely clean and washing the dirt and sediment off through a drain into the river below the works. This operation is so rapid that it only requires five minutes to wash the filter, and the mechanism is so simple that there is little liability to get out of order.

There is also provided a process of sterilizing the filter and sand-bed of any possible contamination from microbes, fungus, or mossy growth, microscopic alga, or microscopic organisms belonging to the class called infusoria, albuminoids, etc., by turning into the filter, through pipes connected to a double battery of steam-boilers, powerful jets of superheated steam, which, in a very short time will effectually kill and render harmless any animal or vegetable matter contained in the water. It makes no difference how muddy the water is when it enters the filters, it comes out pure and clean. The only precaution necessary is to wash the filters often, which is frequently done every hour.

Professor Smith, of Beloit College, Wisconsin, is employed to make monthly analysis of the filtered water, which shows that for the six years the plant has been in use the water has always been good.

When the plan of this filter was under consideration by the Davenport Water Company, two of its members, Mr. James P. Donahue, and Mr. Thomas N. Hooper, went to Cairo, Ill., Little Rock, Ark., Elgin, Ill., Terre Haute, Ind., and other places where plants were in use of similar construction. Most of them had horizontal cylinders. After the most critical examination they were enabled to make many important improvements.

As soon as the State and the nation can effectually stop the dumping of all sorts of filthy garbage into our rivers by the most stringent laws, and secure, through boards of health, their strict enforcement, every city in our country can easily secure abundance of good water by constructing a similar filter-plant.

Sugar and Champagne in Gout.¹

BY GEORGE HARLEY, M.D., F.R.S.,

Formerly Physician to University College Hospital, and Professor in University College, London.

AS the remarks made on the effects of champagne on gout in my paper entitled "Gout in Relationship to Liver-Disease" have been traversed by Dr. Thorowgood, it may be well for me to explain more fully my contention that medical men err in telling gouty patients that extra dry and *brut* are the safest kinds of champagne for them to drink. For like most other widely-spread popular notions that of the pernicious effects of sugar in cases of gout is open to grave criticism, seeing that not only can no reliable facts be adduced in favor of the statement, but no reliable authority for the assertion can be cited even by its believers.

There are plenty of vague traditions that some one knew somebody else that knew some one whose gout was brought on by a too free indulgence in saccharine matters. But when the legend is critically inquired into its foundation is found, like the historical house in Scripture, to rest on nothing but sand. Nor is this surprising when one reflects that the "popular" objection to sweets in gout one hears so much of in this country is alike contrary to every-day experience and scientific observation. (1) Because, were it true, children and women, who consume most sweet things, would be more subject to gout than men,—which they are decidedly not. (2) Uric acid, which is now conceded by all leading chemical pathologists to be the cause of gout, is a nitrogenous compound, and sugar contains no nitrogen whatever. (3) The urine of the herbivora, whose food is rightly sugar-forming, is *alkaline* and not acid. (4) There exists no proof that a sugar-indulging teetotal member of a non-gouty family has ever been attacked with gout when all his brothers and sisters have escaped the disease. (5) The women in Eastern harems, who pass indolent lives and subsist almost entirely on sweetmeats, should all be afflicted with gout in some form or another,—which they are not. (6) Gout is not met with among the negroes

¹ From the London Lancet.

brought up on sugar plantations, who from their earliest years consume more sugar than any other class of people whatever. (7) A fit of gout cannot be induced experimentally by taking sugar. My son (Professor Vaughan Harley), while working at the Sorbonne, in Paris, took 400 grammes (thirteen ounces) of sugar daily, until he completely upset his digestion, and, notwithstanding that he is, like myself, hereditarily gouty, he totally failed to induce a single gouty symptom. He even took, while working in Professor Mosso's laboratory at Turin, seventeen and a half ounces of sugar in the twenty-four hours without producing a single symptom of gout.

One should at least be able to cite a case or an experiment which will bear the test of philosophic scrutiny, proving that a true attack of gout has been engendered by the eating of saccharine foods before venturing to assert that gout is the offspring of sugar. And as until the above seven problems—which are only a portion of what might be adduced—can be satisfactorily overthrown we may brush aside as a mere figment of the imagination the sugar-engendering theory of gout I will without more ado tackle the question :

DOES CHAMPAGNE CAUSE GOUT?

This question can be equally truthfully answered in the negative as in the affirmative, for the chemical composition of different champagnes is so different that while the majority of persons may indulge in one kind with perfect impunity a paroxysm of gout speedily follows a glass or two of another. People have such different idiosyncrasies that in some gout is brought on by all kinds of champagne, in the same way as it is in others brought on by all kinds of whiskey. This is not to be wondered at, seeing that from champagne being a manufactured article its effects on the human constitution vary not only according to the quality of the grape-juice from which it is made, and the method adopted in its preparation, but likewise according to the ability and ingenuousness of its fabricator. Consequently, in prescribing champagne to an invalid, a medical man should never lose sight of the fact that he ought to be as careful in selecting the wine ordered as he is in selecting the drugs prescribed.

The generic name of champagne is in no case of itself a guarantee as to what the therapeutical effects of it will be on a sick person. For careful clinical observation has shown that

while one class or kind of champagne may prove not only an agreeable exhilarating beverage to the healthy, but a palatable restorative remedy to the sick, another, though equally exhilarating to the healthy on account of the alcohol it contains, may be a disease-increasing instead of a disease-diminishing agent to the invalid. For champagne contains a host of active ingredients besides spirit, sugar, and fizz. I emphasize this remark from its being well known that many practitioners simply know that there are two main varieties, called respectively sweet and dry. And as it is to be feared that even the notions they have regarding their chemical compositions, and consequently their therapeutical actions, are of a somewhat hazy character, it may be well briefly to explain what are their more salient differences.

In the first place, then, the word "dry" when applied to champagne is a misnomer, as it simply implies that the wine contains but little saccharine matter. Port wine becomes dry in this sense by keeping it twenty, thirty, or forty years. For in that time the sugar it originally contained has become transformed into alcohol. Hence what it has lost in sweetness it has gained in alcoholic strength, and not only so, but likewise in flavor. For by age are developed the fine aromatic ethers which give to old wines their exquisite vinous bouquets. It takes from nine to twenty years to make champagne dry. But as it is not profitable to keep it in stock for anything approaching to that time, the manufacturer adopts the plan the sherry merchant did, though in a different way, of giving his wine the semblance of being dry. Sherry was easily made to taste dry by treating it with plaster of Paris. The public, however, after a time discovered the fraud, and as a natural consequence sherry drinking went out of fashion. The champagne manufacturer is now equally engaged in killing the goose that lays the golden egg by putting on the market a rough, immature wine, which to the uninitiated tastes as if it were dry, on account of its acidity. Strange though it may seem, not one Englishman in a thousand, unless he be in the champagne trade, can distinguish a sour sparkling wine from one that has become dry by age.

His idea, too, that champagne, even of the *brut* variety, is made without sugar is equally erroneous, as well as that the sugar in champagne is bad for gouty people. On the contrary, sugar is about the least deleterious constituent of wine.

The process of champagne manufacture is briefly as follows :

(a) Every kind of champagne is made artificially out of a still wine which has been prepared, as all other still wines are, be they port, sherry, or claret, by the fermentation of the sugar contained in the grape-juice. Consequently (b) it is as absurd to speak of a natural champagne as it is to speak of a natural cheese,—which is in like manner essentially a manufactured article. (c) There are three distinct stages in the production of good champagne, and in each of them the presence of sugar is absolutely essential. The first stage consists in the rapid fermentation of the sugar naturally contained in the juice of the grape at a temperature of between 60° and 70° F. in open tubs, so that the carbonic acid generated may escape while the alcohol remains behind. The next stage is the conversion of the still wine into a sparkling liquid. This is accomplished by transferring it to bottles before the fermentation has entirely ceased and corking them up tightly, so that the carbonic acid gas now generated may be retained in the wine and escape in sparkling bubbles from its surface when the bottle is opened and the wine poured into a glass. As it is during this stage that most of the aromatic vinous aromas are developed it is not only conducted slowly, at the low temperature of 43° F., but the fermentation process is kept up for weeks, months, or even years, according to the quality of the vintage and the price the wine is expected to ultimately bring.

The bottles until now have stood with their bottoms uppermost in order that all the dirty *débris* resulting from the fermentation of the sugar may fall into their necks and be the more easily got rid of at the period of *dégorgement*,—a process which renders the wine clear and pure.

Before being ready for the market, however, it has, in order to make it palatable, to undergo a softening process, for in its then state it is so rough and sour that nobody would drink it. The viticulturist himself speaks of it as a *vin brut*, meaning thereby an acrid, immature article. Consequently he has to add to it a sweet *liqueur* in varying proportions to suit the tastes of his different customers. The softening process is known under the name of “dosage,” and the *liqueur* employed is made by dissolving pure sugar-candy in fine old champagne along with a certain amount of the finest flavored old *liqueur* cognac procurable.

Strange to say, although the quality of the vintage has a great deal to do with the composition of the dosage *liqueur* employed in different years, according as the season has been a good

or bad one, yet nationality is always the most important factor in determining the relative quantities of *liqueur* added. For each country has its own relative proportion of dosage, thus,—

For Russians from 14 to 16 per cent. of *liqueur* are added.

" Germans "	11	" 13	" "	" "	" "	" "	" "
" Americans "	8	" 10	" "	" "	" "	" "	" "
" Frenchmen	8	" "	" "	" "	" "	" "	" "
" Englishmen	2	" 5	" "	" "	" "	" "	" "

It is, however, only in recent years this low percentage of *liqueur* has been put into the wine sent to England. Englishmen's champagne used to have exactly the same percentage of dosage given to it as was given to Frenchmen's. For the 8 per cent. has the advantage of not only making the wine keep better and allowing the sour acetic acid to become mellowed by age during its contact with the sugar, but during the gradual transformation of the sugar-candy into alcohol some of the most delectable of the fragrant acetous ethers, so highly prized by connoisseurs, are developed. Whereas all these advantages are put a stop to by drinking an imperfectly prepared sour wine under the misleading titles of *extra sec* and *brut*. It is simply because it does not taste sweet that we drink it in the belief that it is dry. This delusion is, however, the least misfortune entailed. For it so happens that vinegar—acetic acid—in combination with alcohol is known to be one of the most potent inciters of gout and liver-diseases, much more so than any of the other acids naturally contained in wine. So it is not surprising that champagne has got a bad repute in gout cases.

Since, however, the facts cited in the earlier part of this article prove that sugar cannot give gout, and that sugar even in combination with alcohol does not cause gout, is shown not only by the fact that gout was a disease almost unknown in Scotland at the time when toddy drinking was so common, and every one knows that toddy is a strong concoction of whiskey, sugar, and hot water, but that sweet champagne drinkers of the continent are far less affected with disease than sour champagne drinkers of England, it is not difficult to understand why many hereditary gouty people, like myself, can indulge in the rich so-called sweet champagnes of France with impunity, whereas a single glass of the English extra-dry and *brut* varieties, by virtue of the unnecessarily excessive quantity of vinegar they contain, imme-

diately provokes a paroxysm of gout. Moreover, the fact that sugar has been shown by carefully-conducted scientific experiments to be not only a potent muscle food, but a powerful exhaustion restorative is a strong additional reason why, when giving champagne to a weak, exhausted invalid, preference should invariably be given to the rich and properly-prepared varieties instead of to spurious dry kinds, which are most probably as little likely to benefit a patient as a similar strengthened alcohol, vinegar, and water concoction would be.

So well is the fact of the injurious effects of crude champagne appreciated by manufacturers that some of the highest standing refused to send any of it out under the term of extra dry until they found that other firms were winning from them their English customers. Some of higher moral tone still decline to do so, and I feel certain they will in the end be gainers by their resolve; for already many persons are beginning to discern for themselves that the so-called extra-dry and *brut* champagnes are simply sour wines with misleading titles.

Constipation; some of its Effects and its Non-Medicinal Treatment.¹

BY E. S. PETTYJOHN, M.D.,
Alma, Mich.

THE large number of people suffering from constipation and its effects, and the clinical difficulty met in obtaining relief therefrom, leads to the conclusion that the full signification of this affliction and its deleterious influence are not comprehended either by the people or the profession.

In its reciprocal influence this condition sustains both a causative and a resultant relation. Constipation as a functional disorder may be defined as an abnormal condition of the great colon and the entire intestinal tract, manifested by the unusual retention of excrementitious material, both as to *quantity* and

¹ Read in the Section on Practice of Medicine at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5 to 8, 1896. From the Journal of the American Medical Association.

time of evacuation. It may be owing either to diminished action of the muscular coat, to the diminished secretion from the mucous membrane, or both, to defective innervation, to habits and occupation, climate or diet, in addition to which there seems to be an infinite variety of causes.

A study of the history of 300 cases shows that about 60 per cent. of patients are suffering from this ailment, and that the number is proportionately larger among women than among men.

Congenital constipation may occur dependent upon the anatomy of the colon, the water being absorbed by a reduplication of the colon itself, especially the descending part, as that part is longer in infants in proportion as compared with the ascending and transverse, and hence liable, by being crowded down into the pelvis, to flexures and reduplications that favor impaction.

In adults the transverse colon is most liable to variation in length and position, and being smaller in diameter than the ascending, aside from congenital malformation, may be bent downward almost to the pubes by long-continued distention, forming a sharp bend at the sustentaculum hepatis and at the splenic flexure, as has been found in two cases under the writer's observation.

In considering this condition, we regard individual habit and idiosyncrasy and compare with the rule, as persons do become constipated without notable or sensible inconvenience to themselves, without manifesting any of the local symptoms, and while having regular and apparently sufficient evacuations.

We come to the consideration of constipation more on account of its relation to other ailments and the entire system than because of the mere inconvenience induced. The intestines and colon and the rectum are considered as digestive, eliminating, and secreting organs, and also as organs of absorption.

With their great extent of retiform tissue enclosing a multitude of blood-vessels and nerve ramifications, with their mucus-follicles and valves of retardation, with their glands, lacteals, arteries, and veins, the powers of retention and absorption belonging to this tripod are beyond compare. The wonder is that all the contents which enter are not taken into the circulation.

While the colon and rectum have not the digestive office we have long supposed, their absorptive power is greater than has been thought, and the quantity absorbed is in proportion to the time of contact and concentration of the substance. While these

organs seem in a certain sense endowed with the power of selection, they do absorb digested aliment, medicines, and deleterious material with about the same avidity.

The intestinal nervous system is noticeably complex. Filaments are received from the pneumogastric, the sympathetic, and from the lumbar cord. After having been distributed to the plexus of Meissner under the submucous coat and the plexus of Auerbach between the muscular planes, branches thence supply the glands, muscles, and blood-vessels. Some preside over the absorbents and secretions, others over the peristaltic muscular movements, others over the intestinal circulation. Not only do these medullary and ganglionic systems direct the functions of the intestines, but through them the nerve centres of the brain have a direct influence over the entire apparatus. Since all functional action in the system is reciprocal, it follows that the functional activity of the chylipoietic system must effect the nutrition of the brain and entire nervous system.

We acknowledge that human life is a constant processional activity of elimination and repair, metabolism occurring everywhere. Observation is demonstrating the part taken by bacteria and microbes in this process in the mouth, stomach, and intestines. In the chemic, fermentative, and putrefactive changes thus occurring, ptomaines are being constantly produced, which, when absorbed as toxic and excrementitious substances, produce retrograde changes in the quality of the blood, diminution of the red blood-corpuscles, and by supplying an infected or imperfect nutriment to the brain, become a prominent factor in the production of cerebral anæmia and nervous debility, only limited in its effect by the shortening of the microbial longevity from the effects of its own secretions. If this deficiency of nutrition or the supply of toxic material be continued, the increased nervous irritability is followed by a decrease, and withdrawal of nourishment is followed by brain exhaustion.

From the normal intestine Babes isolated five species of bacteria, whilst an enormous number of micro-organisms were found in the large intestine and fæces. Bouchard says, "The conditions favorable for the maintenance of putrefaction are so numerous that we ask whether digestion can ever go on normally?" While the hydrochloric acid of the stomach neutralizes the infectious agents, they are passed into the intestines in a state of latent activity, when fermentation again begins. While the bile arrests

fermentation, it is also capable of putrefaction, which is no doubt one of the causes of the offensive breath in constipation. We thus find the small intestine, and especially the large intestine, in a condition to pass products of putrefaction and toxic substances into the blood-current. Since our most inoffensive and most valuable foods (meats) produce toxic substances; since the bile contains poison and the putrefactions of undigested residue produce poison, and the *fæcal* matter is toxic, with all of these shut up in the intestines and colon, how can the guilty (those who do not believe in defecation), or even the innocent, escape destruction? If the kidneys are acting well, some of the toxics escape through the urine, and if the skin is eliminating, it furnishes relief, but these are rather remote sources of exit for so large a quantity of excrement when the way to the outside world is so close at hand.

Hypochondria, nervous depression, nervous headaches, functional neurasthenia, migraine, vertigo, disorders of nerve sensibility, noises in the ears, dyspepsia, and depression incidental thereto, with a long train of psychic, nervous, and nutritional troubles, are directly or indirectly the result of constipation. Even when many functional difficulties seem to be the primary disease, they only form an arc of a vicious circle begun with the nucleus of constipation.

The mechanical pressure against mesenteric blood-vessels by over-distended bowels, especially if long continued, causes increased flow of blood to the brain and a temporary hyperæmia with its concomitant symptoms, like an Esmarch bandage about a limb, or a sudden cooling of the surface of the body, which in winter is the cause of more frequent cerebral hæmorrhages than at other seasons, or like the sudden suppression of the menses or of an hæmorrhoidal discharge, or even the straining at stool, all of which are to be avoided in apoplexy and cerebral congestion, on account of the increased pressure of blood in the brain which they produce.

The nervous system, as the master tissue of the body, needs the highest nutrition, and hence is most easily disturbed. It is fed in its truest sense by the overflow of nutriment after its refinement and elaboration in other tissues. Whether the nerves are nourished by the plasma reaching the axis-cylinder at the nodes of Ranvier or not, we believe with Waller that the nutritional activity of nerve fibre is in the direction of its normal physiologic

activity. Any inhibition of this function will lower the nerve excitability. A long period of repose not only lowers the excitability, but, if continued beyond a certain limit, atrophy and degeneration occur in the nerve substance itself.

Continued unusual pressure produces excessive activity of the nerve supplying the part, excitability is finally abolished, and exhaustion of the nerve occurs locally (as in over-distention of the bladder), or it may even produce a neuritis. A constantly overloaded condition of the bowels may produce either of these local results on the nerve filaments themselves. The effect of this travels backward to the controlling ganglia in the lumbar cord and defecation, to some degree a reflex act, when its directing centre is not sensitive to the controlling impulse of the brain, does not occur promptly, and the constipation thus reacts upon the whole system.

In patients who complain of symptoms referable to the spinal region, and where there is entire absence of anatomic affections of the cord, and often when these manifestations are united with cerebral symptoms and there is general disturbance of the entire nervous system with a neurotic heredity, it is very frequently a functional trouble. Such a case recently came under my care (from the country), a Miss M., aged 32 years. She had previously been afflicted with convulsions, supposed to be epileptic, at and since puberty, but had had none for two years previous to my seeing her. She complained of attacks of severe occipital pain when she would become nauseated and dizzy. At the same time she would have a convulsive-like attack with irregular tremors and a peculiar nodding and swaying movement of the head, which she said she was unable to control. She also had pain in the cervical and lumbar region, deep-seated. These attacks occurred irregularly from one to twelve weeks apart. She was an invalid each time from five to fifteen days. She had been treated for several years and informed by her physicians that she had epilepsy and disease of the spine. Thorough examination revealed absolutely no signs of spinal disease nor anatomic disturbance of the cord. After three months of treatment she fully recovered, besides having gained eighteen pounds in weight. The late Dr. Jewell believed and taught that the effect of constipation might produce a condition of the brain akin to, or that could be classified as, transient mania.

The first elements in curative treatment I consider good food

and good digestion. The diet should consist of coarser foods such as would leave a residue and aid in increasing the bulk of faecal accumulations. Broths, fish with the skin, fresh meats not too tender, whole-wheat and Graham bread, mush, hominy, corn bread, and all green and watery vegetables, baked potatoes with skins, and cereals containing hulls and fine seeds, prunes, figs, apples with the peeling, and all fruits generally. Rest in the recumbent posture for a half hour or more both before and after eating is of value.

Massage on anatomic principles I place first in the mechanical treatment. The manipulations should not be used until two hours after a meal. The thighs should be flexed and the abdominal walls relaxed. The treatment should be given dry, stimulating first the skin, then the walls of the stomach, the different sections of the colon, and the intestines. Pétrissage given so as to impart an oscillating and vibratory movement, combined with the varieties of tapotement, are the best forms of treatment. Cases of obesity and atony of the muscular coats and chronic intestinal and gastro-intestinal catarrh are relieved in two to four months. The intestinal secretions or increased obstruction of the bile-duct is relieved, the peristaltic action is stimulated, and the contents of the sigmoid flexure and entire colon are pressed towards the rectum. If there are biliary calculi no pressure should be made on the adjacent parts, although usually pressure should be made over the fundus of the gall-bladder, to assist the bile towards the intestine. The stimulation of the skin, which is here supplied by the last seven dorsal nerves, the same origin as the splanchnics, as well as the plexus of Auerbach, and the mechanical effect of moving pressure do bring favorable results.

In the use of the cannon-ball, three or four pounds in weight, the patient or operator should be thorough and systematic. The ball should be rolled over the entire abdomen, being used for five or ten minutes morning and evening, the treatment ending by the patient balancing the ball for a few minutes on the navel.

In gymnastics all movements that use and strengthen the abdominal muscles, such as lying on the back and raising the limbs perpendicularly, the flexion at the hips, twenty or thirty times each morning and evening.

Rowing, horseback riding, and cycling are helpful if used regularly. While it is best to have a definite hour, that is not essential, but when a time is fixed, if the preceding half hour is

devoted to the voluntary contraction of the anal sphincter muscles, the reflex effect is to aid in stimulating the peristaltic action. Time should be given, and one should go for relief on the first prompting.

The faradic current of sufficient strength to produce contraction of the different portions of the intestines and colon is helpful. The galvanic current, the cathode in the rectum, large anode over abdomen, repeated daily at the same hour, is effectual.

Hydrotherapeutics have proven successful remedies in the author's practice. Drinking large quantities of cold water on arising and an hour before meals, and two or three hours after food, taking during the day seventy to eighty ounces, besides that with the meals, is of exceedingly great value. This remedy, with regulation of habit, has cured many cases.

Fomentations to the bowels, stomach, and liver daily, and a cold pack to the bowels at bedtime have been successful. Alternation of hot and cold to the spine and the cool bath have shown good results.

The difficulty I find in the use of any or a combination of these measures is to induce the patient to be systematic and persistent in following directions. But I am thoroughly convinced that by these means producing constitutional and local effects, more satisfactory results are obtained than with medicines, and when the patient recovers he stays well.

That constipation has a psychic and a moral effect the laity recognizes, and we will all agree with the author who says, "Those persons whose bowels are freed by an easy, regular movement every morning, so soon as they have breakfasted, are meek, affable, gracious, kind, and 'no' from their mouth comes with more grace than 'yes' from the mouth of one who is constipated."

Vaccination.

The *Journal of Medicine and Science* remarks concerning vaccination that the opponents of this most beneficial measure have only to enter Italy and witness the frequent outbursts of small-pox and its ravages among the rural population to be taught a lesson of its value. Blindness from small-pox, almost totally stamped out in England, finds frequent victims still in Italy, where vaccination is only done sporadically among the country people.

Tuberculosis Infection from Food.¹

BY CHARLES E. WINSLOW, M.D.,

Los Angeles, Cal.



REVENTIVE medicine to-day, like a gigantic signal light, sends its piercing rays into all the world, guiding medical men upward to a plane above their forefathers which gives advantages unknown before. Old theories have developed into facts, prophecies of the past are now being fulfilled, and hygiene has been clothed in new garments of interest. There is more earnest thought along this line than ever before. We have the benefit of the most advanced laboratory investigations, giving us an understanding of the causes of disease hitherto unknown. With this growing enlightenment comes a greater responsibility and a more urgent need of earnest labor in preventive medicine. Science, as she turns the pages of this new book of knowledge, calls for pure food, pure drink, pure air, and better protection from disease and death.

Man seems prone to disease, and of all the ills he is heir to, the most appalling in its dire results is tuberculosis. Like a great octopus it reaches out its tentacles after the human race, blighting all who come within its grasp, sapping the very life-blood, making a wreck of noble manhood and bringing misery and despair to its victims. Having a death-rate in the United States of over 175,000 a year, with one-seventh of all deaths in the world from this dread disease (Harsch), leaving in its wake seeds that will bring care, sorrow, and death to thousands more, it becomes a hideous menace to humanity.

There is an increasing anxiety among the thinking medical profession due to the resistance of this disease to the advanced curative remedies, for at present all have come far short in checking the progress of this most formidable of all diseases. Although in respect to curative medicine we are still groping in darkness, the light of progress has illuminated the path of preventive medi-

¹ Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896. From the Journal of the American Medical Association.

cine, showing that the enemy must be met and vanquished under its banner.

Comparatively a few years ago a majority of the medical men did not believe in the communicable nature of tuberculosis, but scientific research has proved it beyond a doubt, and the cloud of heredity that has hovered as a pronounced doom over hundreds of lives, shutting out every ray of hope, has been dispelled. Many with the predisposition to consumption have accepted this bow of promise, and by changing conditions have conquered the inherited tendency to the disease, becoming healthy and useful men and women.

That the colonization of Koch's bacilli in the animal tissue causes the disease is the belief of the most advanced investigators. If this be true, beside proving that the disease is infectious, it gives grounds upon which we can work out our own salvation by controlling the spread of the disease. The two great mediums through which it reaches the human system are air and food. While the inhalation of bacilli-laden air affects the lungs more largely, tubercular food usually causes the infection through the bowels. The food of a people is its strength; a poorly-fed will be a demoralized people. The more wholesome the diet the stronger is the nation. Among the food-products none take the place of milk. There are produced in the United States nearly 5,500,000,000 gallons of milk, more than 1,000,000,000 pounds of butter, and nearly 19,000,000 pounds of cheese. How important that an article which forms such a large proportion of the food of the people of this country should be pure and wholesome. Tuberculosis is disseminated more largely through its agency than that of any other food.

The most common disease of the cow is tuberculosis. The close relation that exists between the cow and the human family renders it possible for the spread of this frightful disease, and for man's best friend to become his worst enemy. Some writers have claimed that the only nations in the world free from tuberculosis are those that have not domesticated the cow, and that this disease is perpetuated by the domestic cattle. That this is no imaginary danger, but real and menacing, has been repeatedly proved by experiment and research.

Human beings and the lower animals, living upon the milk from tuberculous cows, have contracted the disease. In one experiment seven out of twelve calves, and two out of five

guinea-pigs, fed with diseased cow's milk, developed tuberculosis, while the milk from seven cows infected seventeen animals out of eighty-seven inoculated. Obermüller found that out of forty guinea-pigs, into which milk bought from dealers was injected, three became affected and died. In his experiments, using centrifugalized milk mixed with the cream of the same milk, ten out of sixty guinea-pigs were infected. Roth and Broferro infected guinea-pigs from butter made from the milk of tuberculous cows. In 55 per cent. of the experiments the milk from cows having tuberculosis has conveyed the disease to the lower animals. (Ballinger.)

Numerous cases have been reported before the societies where physicians have directly traced the disease from the cow to the human being. It exists to an alarming extent in our large dairies. Very little milk reaches our cities free from mixture with milk from tuberculous animals. (Bush.)

From 5 to 10 per cent. of the slaughtered animals have tuberculosis. The cooking of the meat used for food lessens the danger of infection from that source. The bacilli introduced into the system may migrate to different parts of the body, forming here and there little colonies, the lungs being most often the seat of attack, the digestive tract next. The infection of the intestinal tract by tuberculosis is more common among children than adults. The increasing cases of tuberculous joints, meningitis, and infected bowels and glands in childhood can be largely accounted for by the use of diseased milk.

The majority of people are not predisposed to tuberculosis; the immature child and the invalid are most susceptible to the disease. The bacilli rarely find a home in a healthy human organism. Anything that depletes the system leaves it in a condition to become infected; therefore an impure diet of any kind tends towards tuberculosis, while good, wholesome food will aid in throwing off the disease. The food of a human being may be full of the bacilli, and still the system be so nourished that it will not retain the germs. While this may be true, still, if the bacilli cannot gain entrance into the organism, there will be no danger of infection.

Tuberculosis is not so contagious as many diseases, but it holds its victims more firmly in its grasp than almost any other enemy of mankind. And yet this curse of the human race can be prevented. To accomplish this there must be strict sanitation.

More and more attention is being given to the subject, not only by the physicians but by the people at large. To-day the hygiene of our cities is one of the great questions with which municipalities have to deal. The sale of food that is infected with disease should be restricted and the punishment made so severe that the dealer will fear to sell such food. Each community should have an inspector, whose duty it shall be to carefully examine all food sold. Some of our cities have greatly improved the quality of their milk-supply by so doing. Sterilizing milk lessens the danger.

Milk containing tubercle bacilli is a diseased product. Wherever there is this micro-organism there is tuberculosis. No tuberculous animal can give pure milk, the disease must affect all the organs of the body. Every cow, private or dairy, should be examined for tuberculosis and other diseases by an expert, and the milk of every new cow entering a herd tested before a drop of it is used. The inspection should be periodical, and carefully and systematically made. There should be a physical examination and the tuberculin test should be used, for it has been proved that milk from cows, which give no physical signs, is often infectious. Although Koch's tuberculin has not been a success as a therapeutic agent, it has proved a useful aid in the diagnosis of tuberculosis, and no herd can be thoroughly inspected without its use. The healthy cows should be marked, and all tuberculous animals, no matter how slightly affected, destroyed. It is a serious matter to go into a man's herd and kill his cattle, but it is pernicious to let such animals live, a menace to a community.

Not only should the cow be inspected, but its treatment and surroundings. The animal from which milk is taken should have the best of care, be fed wholesome food, and have stables and surroundings neat and comfortable. The utensils used for holding milk, making butter and cheese, should be clean and free from dust. No person suffering with tuberculosis should be employed about a dairy, creamery, or where food is prepared or sold.

Only milk and its products from inspected dairies should be placed on the market. There should be abattoirs where the slaughtered animals could be examined by competent experts, and no market should be allowed to sell meat which does not have the inspector's tag.

All articles of diet should be kept from contaminating dust. Even the wrapping paper may infect healthy food. Eating utensils used by consumptives should be disinfected.

Inspection is a necessity. To make it a success the inspectors should be educated men and their decisions enforced by law.

The cost of sickness is great, so immense that we fail to grasp its magnitude, nor can we form a proper conception of the annual financial loss to the nation from this king of terrors. Every life has a financial value, every life saved is so much gained for the community. The child who dies before he is able to be a wage-earner is a loss of just so much as has been expended on him and what he could have earned had he lived. When a man dies of this disease, it is not alone the expense of his sickness and the value of his wages that are lost to the world, but the time of those who cared for him, and the expense of the expanding influence of the disease he has left behind him.

With the wonderful development of our country comes increasing danger of infection from the foreign element which, absorbed by our people, by its lack of ordinary sanitary precautions, aid in spreading disease. There is a demand for better means of protection.

Every charitable institution in this land is an unconscious recognition by the people of the importance of sanitation and teaches that man should not live for himself alone, but for humanity. It is our duty as physicians to devise means for the amelioration of the human race.

Progress in preventive medicine has given us facts that prove the danger, and has shown us a logical means of prevention. With this light to aid us we must impress the truths upon our fellow-men.

The people are thinking about these things and are increasing in knowledge; public opinion in all its unmeasured power is slowly progressing.

Education and a wise use of education will do much, but an educated people cannot do all. There must be a willing government to enforce. The growth of sanitary science calls for advancement in controlling sanitation. State and local authorities cannot shirk the responsibility; they are bound to protect life from the danger of death by disease, as from rapine and murder, no matter how great the expense. For a municipality to pay no attention to the sanitary condition of the community is to be-

come the abetter of crime. Some of the States have taken up the subject and their health officers have done noble work in checking the advance of disease, but in order to do the greatest good to the greatest number there must be more legislation in favor of sanitation. There must be intelligent men at the outposts, guarding hamlet and city, a united action along the line, with a master mind at Washington advising and controlling the entire force.

When advancing civilization shall recognize justice to humanity and give place among our presidential advisers to a man of science who will guard the common safety and welfare of our nation, lessening sickness and want, sorrow and suffering, wasting and death, then may we hope to see science triumph over disease.

Modern Respiratory Advantages.¹

BY W. T. ENGLISH, A.M., M.D.,

Professor of Physical Diagnosis in Medical Department of Western University of Pennsylvania, and Consultant in Chest-Diseases in the South Side Hospital, Pittsburgh, Pa.



HE worker in the domain of preventive medicine often has occasion to feel that there are excuses for becoming pessimistic and for regarding his efforts as unprofitable. After some acute outbreak of disease, his heart is wrung with disappointment and his mind is distracted. A good remedy for such hypochondriasis is to rehearse for himself, or have another review for him, some of the modern respiratory advantages, and trace them to their source. All men are not alike possessed of the "vision and faculty divine," but that man must be indeed prosaic whose soul is not inspired with gratitude and whose heart is not uplifted with hopefulness as he beholds the human body rapidly and surely raised from the abnormalities of life, sublimated, refined, and sacred through the avails of modern respiratory advantages. The individual who labors in the realm of preventive medicine is habituated to a life amid the vapors of melancholy and disease, and if

¹ Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896. From the Journal of the American Medical Association.

no sudden or colossal change dispels those vapors, his mental visualizing is rarely illuminated. However, his efforts are continuously transforming the gruesome abiding-places of disease into palaces of good cheer, and he is creating an improved state of existence for himself and his generation. The influence ceases not, but it steepens in splendor the distant human prospect and reaches out its long arms like a benediction towards the ages that are yet to be.

The solicitude with which he guards the youth from the moment he leaves the nursery is like to the fabled spirit of good that keeps from all evil. So unremittingly has he demonstrated the ill influences of bad air and advocated the benefits of good respiration that the school curriculum has been extended to include a study of the laws which govern the respiratory organs, with those which govern other material things. By the intelligent application of the laws of respiration, which the school-boy is thus taught to understand, there is not only a continuous development of the breathing apparatus, but an extension and versatility of its functions. The school-boy of to day knows better how to breathe than does his grandsire. In him is awakened an appreciation of the fact that the respiratory organs were never intended to act as involuntary parts of the body, and it becomes a portion of his daily care to observe that a fair proportion of the 25,000 respiratory cycles are voluntary and forcible acts. This age, so self conscious in many things, is thus to be secured against lethargic, indifferent, and unconscious respiration, which has been the cause of much of the pulmonary weakness of the past. The most casual observer will note that it is not our boys and girls who need reformation from respiratory delinquencies, but the fathers and mothers. It is only the children who have learned from their teachers how to use their respiratory organs who really know how to breathe. The large majority of those in adult life have never yet learned how to take a full inspiration or execute a forced expiration. They are totally ignorant of what is meant by a voluntary respiration. In consequence of this the average adult never employs the lungs beyond that which is essential to existence, and to those engaged in sedentary pursuits this need is exceedingly small. On the other hand, every child, disciplined to day in the accepted respiratory school, is capable of taking in twice as many cubic inches of air as his parent, and habitually uses his breathing organs with proportion-

ately greater freedom and scope. In comparison with the school-children of to-day the parents are a race of pulmonary pigmies.

This constant oversight of the lungs brings with it respiratory fulness with perfect oxygenation that in turn develops material out of which energy proceeds. The augmented lungs and extended respiratory action beget an increased desire for air, and these promote a condition of mind that is emulous of bright surroundings. There is nothing that secures appreciation of hygienic conditions like a personal experience of their benefits. To one thus endowed there is a delicious sense of pleasure in the pressure of the lungs against their confines, and it is not easy to deprive him of his powers to battle with bad air.

These methods of cultivation secure an esthetic and cultured respiratory demeanor, and at the same time create a longing for complete and repeated changes of air, much as the cultivated taste of the epicure delights in changes of viands. How young, wholesome lungs do yearn for some new brand of alveola-titillating atmosphere! Moreover, the highly educated breathing apparatus has analytical capabilities so that it may appreciate that a molecule of oxygen is an impact of two atoms of the element while it recognizes a molecule of ozone as a combination of three. Furthermore, the lungs feel the corroding energy of the triplet to be many times greater than that of the twin, and the influence it exerts upon the breathing apparatus exemplifies a higher intelligence than mere automatism. An educated pair of lungs observes that the air is not imponderable and notes the thermometric and the barometric rise and fall. The mind and the lungs together grow familiar with the physical character of the air, its invisible inhabitants, the microbes and their potencies for good or ill, as well as the general and specific qualities of the air-dust.

If it is true, as is calculated, that in the air of the city a man breathes 37,000,000 spores every ten hours, it is not from aerial purity that any of the city denizens continue to live and move and have their being. It is also well known that in the atmosphere everywhere there is an opulence of oxygen, and the greatest need is a capacious and intelligently controlled breathing apparatus to utilize it, and at the same time to successfully conduct the hygienic chemistry of the perfect function. The educated and sensitive lungs will isolate the deleterious ingredients more rapidly than the microscopist or the chemist; and those objects entrapped upon the microscopic slide, which appear so interesting

and beautiful to the visual sense are altogether unlovable to the breathing apparatus when they gain access within their sacred precincts. This ever-increasing discriminating capacity of the human lungs enables men to remain for a season amid deleterious influences with comparative safety.

It was assumed many years ago that the coefficient of oxygen needful and belonging to animals was fixed by the animal's intelligence. Thus, a dog required more oxygen than did a hare of equal weight; the chimpanzee, the nearest animal to man in point of anatomic resemblance, needed less than man. Whether these estimates were considered fanciful or not, it is certain that to breathe well to-day is the most modern method of demonstrating advancing intelligence.

Falling in line with this display of wisdom in the exercise and development of the lungs are the efforts that are everywhere made to reduce the aerial threatenings and improve the quality of the air we breathe. But for these efforts the vitiated city atmosphere would be most deplorable in its consequences to those compelled to remain within the urban limits. However, it is only amid such surroundings that we can discover how apparently insensible some persons are to the subtle influence of vicious atmosphere, and observe the variety of means which contribute to counteract the bad air and unhygienic conditions.

The elaborate and perfect system of interchange that has been going on since the world began between the earth, the vegetable, and the animal kingdom, with no waste of material, still continues to command the admiration and thanks of every grateful creature. This is also supplemented by a process of sanitary chemistry—more flexible and variable—by which the actions and reactions of materials and the affinities and aversions of the silent and unseen forces are made to conform in the main to the best interests of human kind through the provisions of the *vis medicatrix nature*.

To reinforce these natural efforts at sanitation, every city to-day has in its employ a capable corps of workers whose business it is to look after the various impurities. It is the custom in several municipalities to gather a measure of the atmosphere from different portions of the city and force it through materials in which are entrapped the impurities, and these are carefully isolated and estimated, and the result announced. To afford all who desire to acquaint themselves with the relative impurities

existing in different localities a record is made at intervals not exceeding one week.

The use of the microscope and other instruments of investigation has become popular amusement, and there is an individual as well as public surveillance of the atmosphere. Through thousands of channels of observation the intelligent layman is accumulating experience that enables him to trace facts and inferences to their logical conclusions, and the good results are constantly multiplying. Knowing that evils exist, he seeks to prevent their influences in himself and others, and though his supremest need demands his presence for a season amid the unwholesomeness, he provides himself with a home beyond its contaminations, where he can retire after his daily duties are over, and render his lungs clean again ere he starts them upon their fresh career of defilement. His household is continuously kept amid the respiratory advantages.

Towards the attainment of these possibilities every recent invention seems to felicitously trend. The proper thing is ever more and more becoming the popular thing. In modern street-paving there are some remarkable advantages secured to the respiratory apparatus. The myriad crevices favoring the accumulation of dust and offal in the cobble-stone pavements are replaced by the smoother surfaces of the granite and asphalt. These pavements in the streets of the present city make the dust obvious to the street-cleaner, and spontaneous removal by rain-falls is facilitated. The frequent use of the sprinkling-cart has a salutary effect in lessening the contamination of the respirable air. We have recently bade adieu to the lumbering horse-cars and the thousands of horses which contributed to the filth of every city. The dust, the offal, exhalations, effluvia, gas, and odors innumerable incident upon the vast herd of horses upon the streets are no longer with us. By the electric- and cable-cars thousands of horses in addition to those formerly employed by the horse-car companies are rendered unnecessary. The commodious and wholesome rapid-transit cars are a desirable means of conveyance, and the great celerity of travel yields additional advantages by expediting business, social, and pleasure trips. By the reduction of evil long prevalent, and the substitution of the most royal good, they contribute to modern respiratory advantages beyond computation.

The more recent methods of city illumination has done much

that is favorable to wholesome activity in the breathing apparatus. The old time fishtail gas jet, capable of consuming as much oxygen as several persons, is substituted by the electric light. This is especially noticeable in assembly-rooms. By the use of electric light there is no oxygen waste and no products of imperfect combustion. Its universal employment would cause an oxygen saving to every city sufficient to supply twice the number of its inhabitants with good wholesome air.

In the matter of heating, the respiratory organs are considered. The air is not permitted to become gloomy with smoke and other evidences of imperfect combustion, and the smoke-consumer is voluntarily or legally adopted. In the homes we can have our apartments warmed by the moist or dry methods, and can so arrange that there will be an equable, continuous, dry atmosphere, free from dust. Again, we may imitate the barometric rise and fall to suit our fancy or gratify our wish. In the districts where natural gas abounds the air can be kept free from smoke by its employment as a fuel and without even the annoyance of dust from ashes. Some of the more recent methods of supplying air and heat to modern buildings embrace advantages that are destined to lift us out of the empire of death from aerial impurity. The air is drawn by fans through closely-woven silk screens or forced through baths which wash and render it aseptic. The shafts into which the atmosphere is drawn are extended to a high altitude to avoid the dust and contamination. After gaining admittance to the basement it receives the desired barometric and thermometric qualities before it is delivered throughout the building. In each room is placed an indicator with a movable needle, by the least motion of which the temperature of the apartment can be changed. This adjustment resembles that portion of our time-pieces which enables us to regulate its speed. Hundreds of other aids and means of protection to the developing breathing apparatus can be observed in modern city building.

How eminently fitting that an age which protects and fosters its respiratory good should form a remarkably close alliance between its pastime and its business. Wherever we go on a Saturday afternoon we find the city denizens hastening, by every avenue, from the crowd and tumult into the more rural surroundings. The old dead roadways, that a few years ago were overgrown with weeds and grasses, teem with cyclers, and the little town along the way lifts up its head again as if possessed of a

new life. The glorious half-holiday rescues many a failing respiration from the thralldom of disease. To take a stroll or join in some of these methods of oxygen hunting, or spend the Sabbath amid nature's wholesomeness, is to serve God. A half century ago this would have seemed sacrilege and the Saturday half-holidays would have been regarded by our grandsires as sinful and profligate. But this is the end of the nineteenth century, and the world is growing young again through its modern respiratory advantages.

Cricket, foot-ball, base-ball, tennis, golf, fishing, and athletics generally are familiar to every place and are regarded as suitable pastimes for all young Americans. How they have aided in the resuscitation of some of the yielding respiratory organs! It is not the school-boy, neither the idle men of means who are interesting themselves in these sports and pastimes, but the masses. The countless excursions by rail or water are daily inviting a willing humanity to bathe their bodies in the sunlight and purify their lungs in the aerial change. Whatever morsel of air or quality of atmosphere one desires may be secured by application to the numerous competing land or water-ways, and he will comfortably, cheaply, and with great celerity be transported to the Eldorado of his desire. With these new experiences and ever-changing quality of the respired air, the lungs not only develop their vital capacity but acquire a versatility in their methods of accommodating themselves to the aerial circumstances. There is undoubtedly remarkable adaptability by which the lungs may adjust themselves to the conditions. And this serves their possessor in good stead when it is impossible to select the environments, because the respiratory versatility enables him to breathe the disease-laden air with comparative impunity. Man is to-day capable, for the most part, of educating and subjugating nature, and when the surroundings are at fault he makes or modifies them; failing in this, he can rely upon the discriminating care acquired by his lungs to render the atmospheric foes inert.

Through all the avenues of hygienic information the truth is being ever more and more impressed that pure air and exercise are equal forces acting in the same direction. The contaminations from disease-germs and terrestrial impurities are to be met by an equable antagonism vouchsafed through the intelligent employment of the functions of respiration. Meanwhile most of us agree with Lord Beaconsfield that "the atmosphere has more

to do with human happiness than all the accidents of fortune and all the acts of government.”

The adjustment of the respiratory possibilities to the needs of each individual is largely a matter of his own choosing. There are some who have tarried too long under the lethal influences of indifferent respiration, and have in consequence bartered their birthright. Some again there are whose lungs, like the Scotch farms of which we read, are “poor by nature and ruined by cultivation.” There may be no regal duty for such to perform, but even these can hold from future human struggle the burden of preventable suffering by negatively remaining away from the current of human life that is to-day flowing so directly towards the goal of physical completeness.

The Pulmonary Invalid in Colorado.¹

BY CARROLL E. EDSON, A.M., M.D.,

Physician to Out-Patients, Boston City Hospital.



CERTAIN features in the life of a pulmonary invalid in Colorado have impressed themselves deeply upon me during a year and a half's residence in that State. They are non-statistical, every-day facts. They can be appreciated fully only by actual experience or observation; but they are of such direct and vital importance to the well-being of the invalid that I wish to bring them to your careful attention.

The meteorological statistics of Colorado climate which you are acquainted with are chiefly those of Denver and Colorado Springs; but please remember that Colorado is nearly 400 miles long by 280 miles wide, and varies in altitude from 3000 to 14,000 feet above sea level. Short distances, particularly in the invalid belt, along the eastern slope of the mountains from Pueblo to Fort Collins, make marked difference in the weather conditions. This is especially so about Colorado Springs, where the isolated mass of Pike's Peak acts as a storm centre and meteorologic eccentric of considerable moment. Arrapahoe County, of which Denver

¹ Read at the Annual Meeting of the Massachusetts Medical Society, June 10, 1896, and recommended for publication by the Society. From the Boston Medical and Surgical Journal.

is the seat, is alone as large as Massachusetts and of about the same shape. Parts of the State, especially attractive to newcomers because of game or gold-mines, are entirely unsuitable for an invalid. Do not then think, from your knowledge of general sun and humidity statistics, that it suffices to send a patient simply to Colorado, to settle where he may please.

The two factors most essential to a successful use of Colorado climate for pulmonary tuberculosis are these: early diagnosis, with prompt exile, and especially medical control of the case from the start in the new climate. The importance of the first, and the great advantage of climatic therapeutics in the early stages of pulmonary phthisis, the malarial stage, if I may so call it,—of debility, slight febrile movement, a quick pulse, and few or dubious signs on chest examination,—cannot be insisted upon too strongly. It is not my purpose, however, to discuss here the question of climate or altitude. I assume throughout this paper that the invalid has been sent to Colorado as the place best suited for his case; and by *invalid* I mean a person sent to Colorado because of tubercular disease, no matter how slight or localized the invasion, or how little impaired his general health.

Let me only say that Colorado as a last resort, when the patient has gone steadily from bad to worse in Florida or Saranac or Asheville, is very different from Colorado at the start. As Fisk says, "There should be no more delay in the wise selection of climate than in the early diagnosis of the disease. Delay is dangerous. Tentative methods are not to be tolerated. The patient is entitled to the best that medical experience can offer."

What I wish to call particularly to your attention is the need of proper control of the patient while in Colorado. Hope alone, even *spes phthisica*, or air, even that of Colorado, if misused, will not cure tuberculosis. Many patients, arrived in Colorado, act, sometimes it must be said under advice from physicians at home, as if the end were gained and they had no more responsibility. In reality the fight has but begun, and it is a fight to the finish with the deadliest foe man has. It lasts a man as long as he lives, and is won not by some great sacrifice, even the going West, but is gained only by constant unceasing watchfulness of little things. "Every impairment of digestive power, every decline in muscular vigor, every breath of foul air breathed is a point lost in the fight in which every item, however apparently trivial, tells in the long run."

A change of climate, with no attention paid to change from confined, unhygienic occupation and injurious habits, to a proper out door existence, is a game but half and poorly played. Proper housing and abundant nourishing food are as essential in Colorado as in New England, and require local knowledge and careful search to find.

The city of Denver itself is often smoky, and a city anywhere is not the place for a pulmonary invalid to live in. The suburbs of Denver, however, to the east, southeast, or west, are so situated in reference to land configuration and wind currents as to be entirely free from smoke, and offer as clear an atmosphere as that of Colorado Springs. The elevation is a thousand feet less than the Springs and much more agreeable to many persons. I found, myself, that although I was not troubled by the altitude at the Springs, a return to Denver gave me an immediate sense of greater energy and well-being.

Such places as Montclair, University Park, Petersburg, or Berkeley are admirably suited for invalids, and are all within the street-car service. Living in Denver is less expensive than at Colorado Springs.

Many places in Colorado, and especially some of the newly-recommended towns in Arizona and New Mexico, while excellently adapted atmospherically, are absolutely unfit for an invalid by the impossibility of procuring proper food. Ordinary ranch-life, with its changeless diet of soda biscuit and bacon, is undesirable for a patient who needs abundant, easily obtained nutrition. A strong man can go with advantage into the wilds of the White River country after large game, but the hardship and rough diet of the trip will undo an invalid's winter gain. I have seen more than one patient seriously and permanently set back by such a summer's outing.

Let me impress most deeply upon you that an out-door life in Colorado does not necessitate roughing it, and for the patient with phthisis should not include it, no matter how slight the invasion or apparently vigorous his condition. You do not realize, perhaps, how often patients, particularly incipient cases, are sent West with the remark by the physician here, "Oh! live out of doors; have a gun; live in the saddle. So long as you gain in weight and are feeling stronger, you need not see a doctor." So they do not, till a longer ride than usual, or an exposure to a Colorado wind, with its penetrating power of tiring you out, puts

a stop to their improvement and starts them "down hill." The golden opportunity for the invalid in Colorado is the start and the keeping it.

The first response of the patient to the new climate is often astonishingly quick. There is a quality in the dry, warm, gloriously sunny air which seems with each breath to efface that sense of hopeless tire so common in incipient cases. It is not uncommon to see patients gain two pounds the first week in Denver, and, *under proper regimen*, to continue at that rate for a month or more. In my own case, if you will pardon a personal allusion, there was a gain of fourteen pounds in the first six weeks and an almost entire cessation of cough in the first three. With the gain in weight comes a similar and often greater gain in nervous energy. The sun and wind soon cover the pale cheek with the Colorado bronze. The patient looks and feels like a new person. It is needless to say that the repair of invaded tissue does not keep pace with this general gain. The plump, bronzed face is not an index of the condition of the chest. It is difficult to make the invalid new-comer realize this and feel the importance of not jeopardizing the splendid start. It is the reward of inactivity and is forfeited by overdoing. Once lost, experience shows that the climate is chary of a second gift where her first proffer of health is neglected or misused.

Out-door life, *without exercise*, is the secret of success during an invalid's early months in Colorado. The conditions of air and sun in Colorado are such as to make an out-door existence of continued inactivity possible, in a way hard to conceive here in New England.

A knowledge of local surroundings and care in the selection of a dwelling place can make such a life possible and pleasant. A veranda open to the south and sheltered from the wind by wall or canvas screen is as important an item to secure, when house-hunting, as a well-ventilated, warmed sleeping-room. It is even more so, for the patient is to spend the larger part of his time out-doors. An ideal arrangement is a recessed loggia above the ground open to the south, and so sheltered always from the wind, but giving a wide view over the plains to Pike's Peak and that unsurpassed stretch of 200 miles of mountain range. In such a nook an invalid can sit even in the shortest days of winter, at least seven hours every day in clear, dry air where every breath is one of benefit.

Exercise at first should be absolutely forbidden. The elevation alone causes sufficient pulmonary work. There is chest expansion gained while the patient is wholly still. After a few weeks of quiet gain, exercise may be begun by short walks, beginning with an eighth or quarter of a mile, a distance which seems especially ridiculous in the clear air of Colorado, where objects twenty miles away do not look five. Keeping a close watch for slight rise in temperature, or digestive fatigue, the distance walked may be gradually increased. An excellent change and one agreeable to the patient, as it allows him to get farther from home and perchance out of sight of his starting-point, is driving, not in a high jolting trap, as is too often seen, but in a buggy with an easy-gaited horse, so that the patient has no drag upon his chest and arms from tight reining. From a short drive at first, the invalid can gradually come to spending the whole day in jogging about over the plains. Horseback riding is to be long deferred and most cautiously begun. It has proved a direful cause of hæmorrhage or of set-back. It is difficult to make the invalid wait patiently for this, the most prejudged and attractive feature of his western life. The objection to horseback exercise applies with double force to bicycling.

This continued quietness is not the manner of life pictured to most patients on going to Colorado to regain their health, but it is the only one which will be without serious risk.

Let me now call your attention to a few details which directly affect the daily life of the invalid in Colorado.

The climate is very uniform by monthly averages, but the weather from day to day is not always at the mean. Changes from hot to cold are as abrupt and marked as with us. There is not, of course, the damp rawness of our eastern coast, but the contrast between sun and shade is more decided. I have, myself, seen in February two thermometers on my veranda, one in the sun registering 90° F., and the other, not six feet off, in the shade, at 45° F. The clear, dry air holds little heat, and the warmth is all in the sunshine. A thin, cirrus cloud, no more than is grateful to the eyes, will take all the warmth from the air and remind you that after all it is mid-winter.

The open cars run all winter, and there are but few days when an invalid cannot ride in them. He should always have a travelling rug to throw across the knees. I have ridden seven miles in an open car at eight o'clock in the evening in February

without discomfort ; but there is no time when a patient should go far from home without a wrap, even in warm mid-day. The wind comes suddenly and strong from cloudless skies, and many days, though warm and sunny, are far too windy for an invalid to walk or ride. While the wind may last but a short time, it rises suddenly, and the exposure in reaching home may be great. The dust-storms are less frequent, but more trying.

The battle against tuberculosis is one of detailed watchfulness. The lack of care which the average invalid in Colorado shows for the important little things is most surprising.

To have a few friends in for tea of an afternoon will seem to you a harmless diversion. Here is the picture as you see it in Colorado Springs. At four o'clock, when the western sun is streaming warm and bright across the mesa, the patient leaves the open air of the veranda and spends the next two hours in her room with six or a dozen friends. The air becomes warm and close, and the energy gained by the day out-doors is soon spent. The dry and the moist cough, not heard when the guests first arrive, begin later in the hour and soon become an integral part of the hum of conversation. Nature sends her flush of protest to the cheeks. Two hours of glorious possibility have been lost. They have been spent in-doors instead of out, and in-doors under bad conditions.

Young men sent to Colorado should be made before they start to feel the seriousness of the fight ahead of them and the necessity for simple living. The West is open-hearted, cordial, and essentially a man's country. Club-life is offered freely and may have proper use, but for an invalid to take his afternoon's rest from a morning's over-fatigue at golf or coyote coursing, upon the couch in the smoking-room of never so charming a club, is not conducive to his best recovery. Piquet and poker are excitants, but fresh air and early hours are better tonics for tuberculosis. The road to health does not lead in the way of dancing, dinner, and theatre parties. There can be no neutrality in the fight and nothing that does not count ; whatever is not directly for recovery is against it.

I put this earnestly, but the recovery of health from tuberculosis is not a pastime. As Fisk says, " It is a hard business, requiring unremitting attention, constant daily care, and a stout heart." The timely courage and restraining word which can come with effect from the physician only when he is in close

touch with his patient, are of untold worth. From the few details even which I have called to your attention it will be obvious to you that we here cannot direct our patients out in Colorado. Do not then prejudice a quick and sympathetic accord between your patient and his new doctor by careless and erroneous speech about his new western life. Not for him are "the wild joys of living, . . . the hunt of the bear." His proper conduct is a quiet, well-nourished, out-door life under a physician's control. Our duty in the East, if we are to do it to the full towards the patients we send to Colorado, is—

To make earlier diagnosis.

To send our patient away at once while his chance for full recovery is best.

To send him not simply to Colorado, but to a *physician* in Colorado, unprejudiced as to manner of life, admonished to confide and obey.

The Hygiene of Water-Supply.¹

BY ALFRED SCHOFIELD, M.D.



WATER, when pure, is not a dubious mixture, like air, of gases in various proportions, but is, as we know, a definite chemical product, formed by the union of two volumes of hydrogen with one of oxygen, the three volumes condensing into two as the gases change to a liquid. We say "when pure," for seldom, indeed, is this interesting fluid composed of these two gases alone. We hear a good deal about the "adulteration of food" act; but all the adulterations of food put together, or of other beverages, are not to be compared in importance with the adulteration of water. We will prove our words farther on.

Meanwhile, consider what a tricky sort of fluid this innocent compound is. In the first place, it is protean in form: it can be in turns a solid, a liquid, and a gas. But that is not all. Fluids, as a rule, expand with heat; water, however, at 32° F., when heated, begins to contract in volume until 39° are reached, from which point it expands. Water just about to freeze at 32° F. is, therefore, lighter than the water 7° warmer, and hence

¹ Abstract of article in the Eclectic Magazine, taken from Leisure Hour.

risers to the top,—one result being that ice forms on our ponds first at the top, and not at the bottom. Another painful eccentricity of water when it freezes is that, instead of contracting still more in its change from liquid to solid, it has the truly exasperating quality of expanding one-eleventh of its bulk, bringing destruction and ruin thereby into all our houses by burst pipes and boilers.

If we take water at its other extreme—that of heat—its behavior becomes positively weird. In its change from gas to water three volumes were reduced to two ; in its transformation from water to vapor two volumes do not become three, as we should naturally expect, but over 3000 ! It is true that while the one volume of water is incompressible, these 3000 are elastic ; but this is only what we should expect. It is this mighty increase in bulk and elasticity that makes steam the mechanical power of the universe.

Steam, again, contains an immense amount of what is called latent heat, as it requires nearly 1000 times as much heat to raise boiling water into steam as to raise water from 211° to 212° F. We merely mention this in passing, as we do many other facts, by way of remembrance, and not to reduce these pages to the level of a class-book. We emphasize this point of the latent heat of steam, however, to bring intelligent opinion to bear upon the immense superiority of steam as a disinfectant compared with hot air. Air at 213° F. is 213° and nothing more, and very soon gets below this ; but steam at 213° F. has a reserve force of latent heat in the background that renders it immensely more efficacious in destroying spores, penetrating as it does into the folds of the infected articles, and gradually parting with its latent heat.

The sources whence we obtain water are mainly five in number,—one from above (the rain), two from beneath (wells and springs), and two on the earth's surface (upland waters, such as lakes and reservoirs, and rivers).

It is generally supposed that rain-water, at any rate before it reaches the earth, is absolutely pure. Such, however, is not the case. In the first place, in England all the rain-water contains on an average about two grains of salt per gallon. Then it always washes the air through which it passes, and hence, before it reaches the earth, is laden with spores and germs, and dust and particles of all sorts. Even if it were pure, it is sadly defi-

cient in quantity ; for the rainfall in England would not supply above fifty people per acre, although nearly 3700 tons of rain per annum fall on every acre. Rain-water is not very palatable. If used for drinking, it should be stored in stone or slate cisterns underground, as at Gibraltar.

With regard to the surface waters, no river in England is long enough to purify itself from the sewage that falls into it. Naturally river water is extremely pure, and is much less hard than spring-water, and would form a good drinking-water but for the reason given above. Nevertheless, London, as the largest city in the world, dependent upon river water, draws up daily nearly one-third of the whole river Thames. Of course, such water cannot be used directly, but requires the most careful filtration. The water is allowed, first of all, a week to settle in reservoirs, to give the coarser sediment time to settle, and it is then run off on to the filter-beds, which are several feet thick, and constructed of very fine sand upon the surface, with coarser sand and gravel below. The real filtering agent is the inch of fine sand, and until lately, whenever this had been used a short time, it was removed and well washed.

A most extraordinary revolution in filtration has, however, been brought about by our recent discoveries of the purifying and antiseptic powers of microbes. We knew they are the scavengers of the earth, but were slow to understand that they might with ease be pressed into our service and compelled to do our dirty work to order. A layer of mud containing millions of germs to the cubic foot is spread over the surface of the sand, and so far from being cleansed from impurities, it is never changed as long as the water will pass through. The result is wonderful. A jelly-like mass, consisting largely of living organisms, forms on the top, which is the real filter. These germs seize on and oxidize all organic matter so completely, and are themselves so incapable of penetrating the layer of sand beneath that the water thus filtered is far purer than that passed through the purest sand. By this extraordinary means a living filter is constructed, and the bacteria are compelled to do our work just as if they were day laborers or other drudges. Of this water Londoners consume some thirty gallons per head (being double the amount allowed in Berlin), over 120 million gallons being supplied daily for the direct use of the people.

Upland surface water is very much purer and better for drink-

ing purposes. It is also very soft, and great cities are increasingly looking to lakes for their supplies, and, if these do not exist, are creating them as needed, often, indeed, thereby rather enhancing the beauty of the neighborhood than destroying it. Liverpool, Manchester, and Glasgow are now all supplied by this means.

As to springs and wells, the water varies considerably. Of course, all that comes from deep sources is, as a rule, pure, but shallow wells in towns and villages are an unfailing source of disease, owing to their contamination. In cottage gardens we frequently find two holes dug,—one for sewage, the other being the well; and in some cases, where the soil is porous, this is deemed a positive advantage as regards the sewage, which leaks out so quickly as to save the trouble of emptying! Where it leaks to is generally the nearest well; and it is perfectly surprising to see how bright and clear the water often is from these “sewage” wells; and not only so, but how the constitutions of the natives can resist the sewage poison for years, though drunk daily. The leakage, which may have gone on for an indefinite time, perhaps, is only discovered at last by an epidemic breaking out from some disease-germs imbibed. Of course, the water will not keep, and becomes very foul and muddy after rain.

Deep wells always draw their supply from beneath some impervious stratum, beyond the reach of any surface pollution, and the water often comes from a distance, where this stratum rises to the surface.

An interesting experience near Liverpool shows that the new red sandstone is not always to be trusted. A deep well was bored into it at Liverpool nearly 500 feet, all being carefully bricked except this part in the solid rock. The result was that, there being large fissures in the rock, the shallow wells, many of them impure, for some distance round, were drained dry into this deep well. The villagers, seeing these wells of no further use as wells, utilized them as cesspools. These gradually drained, of course, also into the deep well, the water of which soon became so foul it had to be closed, a complete system of drainage provided for the district, and it was eighteen months before the water became sufficiently pure to be used.

We may sum up good and bad drinking-waters by saying that springs, deep wells, and upland surface waters are, as a rule, wholesome; that stored rain and lowland surface waters

are suspicious; and that shallow well and sewage river waters are dangerous.

Just lately, again, river waters have risen in repute, for it is found, if free from actual sewage, the germs in them have an antiseptic power rather than a destructive power on the human frame, and are thus more active for good than a pure distilled water that contains nothing but hydrogen and oxygen. It is, indeed, only gradually that we are getting over our insensate horror of all germs, and are beginning to discriminate between good and bad.

Water may be pure and wholesome and yet not palatable. Distilled and boiled waters are instances of this, and the reason of their tastelessness is that they contain no air. They become palatable if poured over toast.

Water is called "hard" and "soft" according to the amount of lime and magnesium salts it contains, if not more than six grains per gallon, or, in other words, six degrees of hardness, it is called soft; if more, it is called hard. If the salt is carbonate of lime, it is called temporary hardness, because the salts can be deposited by boiling; if salts of magnesium, it is called permanent hardness, because boiling does not remove them. The latter is much the more injurious.

It has long since been found that for water-pipes inside a house, where so many twists and turns are requisite, there is no material so convenient, so durable as lead. Soft water, however, flowing through lead pipes, dissolves at once a small portion of the lead, and rapidly produces symptoms of lead-poisoning in those who drink it. One-tenth of a grain per gallon is sufficient to produce them.

The purest, softest waters act most rapidly upon lead; on the other hand, if hard water is used, it forms at once a coating inside the lead pipe, completely protecting it from entering the water. Hard water, therefore, is so largely used, not only because it is so readily attainable, but because it is such a safe water for domestic purposes. On every other ground it is a nuisance.

This protective coating of our lead pipes gives us a hint, if we possess lead cisterns, not to have them scraped when cleaned, so as to remove this coating on the surface, but merely wiped with a soft cloth. Too much zeal in this case might readily do a great deal of harm,

Moderately hard water is not injurious for drinking, and is very palatable; but if it is very hard, and particularly if there be much permanent hardness in it, it is bad, especially for those who have any predisposition to gout.

The appearance of water is absolutely no safeguard; sewage water, containing every form of organic impurity, may, as we have said, be perfectly clear, and is very often sparkling. We have also shown that among those who are accustomed to its use it may be drunk with impunity for years, and is even stated to be absolutely fattening! No water is really safe to drink unless its source be known and its purity beyond suspicion, or it be *boiled*.

There seems to be, unfortunately, a not unnatural prejudice against the use of boiled water. It is insipid and not always quite cold. Under these circumstances, the British matron is apt to fall back on the domestic filters. This is, indeed, a disastrous and dangerous error.

A filter, as a rule, is kept in the basement, and, although regularly supplied with water, at any rate when the family are at home, is seldom or never cleaned. Recent researches, unfortunately, show that, whether it be cleaned periodically or not, it is no absolute safeguard, for it has been clearly proved that all ordinary filters, after a day or two, largely increase impurities in the water. They are, indeed, germ manufactories; and water comparatively free from germs obtains innumerable organisms when passing through an ordinary or neglected filter. The idea of straining off impurities by charcoal and other powders is good enough if the water to be filtered contain any impurities coarse enough not to escape; but we may be thankful that all the water supplied to our houses has been already filtered with more thoroughness than we can do it at home. All filters should be banished from the house rather than so used as to accumulate and distribute germs.

There are perfect filters, the use of one of which has decreased the number of cases of typhoid fever in the French army over 60 per cent., and which absolutely strains off all germs. In these filters the water has to force its way through the microscopic pores of unglazed porcelain or fossil clay, which are small enough to strain off the minutest organism. Even these filters have to be placed in boiling water every other day to keep them in perfect order; but this entails very little trouble.

With regard to aerated waters, we must always remember there is no absolute safety in drinking them if they are artificially made. Natural effervescing waters, bottled at the spring, are presumably quite safe. We mention this because so many travelling abroad, and distrusting the water of continental hotels and restaurants, take refuge in siphons, which may be quite as dangerous.

The two principal diseases conveyed by water are typhoid fever and cholera. Nearly every outbreak of typhoid fever has been traced to impure water. If nothing but boiled water were drunk by the community, it would do more to stamp out typhoid fever than any other means that can be conceived. Of course, in this we include the water so frequently found mixed with milk. If we are to drink, therefore, nothing but boiled water, it means we must boil all our milk as well.

There can be no doubt that the extent to which typhoid fever still prevails in England is a disgrace, for it is not only a preventable disease, but one without any redeeming quality. It kills people quietly, in large numbers, without any sensation ; therefore people are not as afraid of it as they should be.

Cholera differs from this *toto callo*. It is, undoubtedly, our best sanitary inspector. Most of the drastic reforms that have been carried out in sanitation throughout Europe have been suggested by inspector cholera. This disease is still a terror ; and so long as it continues so, it is difficult to say whether it destroys or saves the most lives. All our ports have been put in drawing-room order, under the orders of this inspector.

Cholera is, undoubtedly, a water-borne disease. The classical case that inaugurated the epidemic of 1866 is well known. A man in Southampton travelled up to town and took lodgings in a house in the northeast of London, near the Lea. He there had a mild attack of cholera, with the result that the water of the river was contaminated. The water company that derived its supply from this polluted stream unfortunately happened at the time to have its filtering-beds out of order for twenty-four hours, with the result that the cholera germs were distributed widely enough to cause the deaths of 16,000 people. Of course, if the 16,000 people had boiled their water, they might have escaped. It does not matter where we go, whether to India, Mecca, Hamburg,—where the last outbreak left its plainly written lesson,—or Marseilles, the epidemic is caused and spread by drinking dirty water.

The river at Marseilles received its cholera germs in a remarkable way. Twenty corn-mills discharged their refuse into it, the corn coming from Russia and India, where it had been trodden out and handled in cholera-stricken districts. The condition of the Holy Well at Mecca is wholly indescribable in these pages.

Perhaps, indeed, we have said too much already; and yet it is not too much if it leads every reader henceforth to forswear unboiled water, unless derived from a known and perfectly pure source.

How Disease is Spread.

There has lately been some correspondence on this subject in the *Standard*, which is interesting in contributing to our knowledge of the great carelessness which some individuals exhibit as to the public welfare. The few cases that we hear of are, unfortunately, in all probability a very small proportion of those who actually travel in an infectious state. It would be well if individuals more thoroughly realized the far-reaching effects of illness and death which their selfishness or carelessness may lead to, and a severe penalty in all cases where carelessness in this matter has been proved should be inflicted. Of all the cases which have been quoted, by far the worst example is that of a young woman who was sent from a London school, when suffering from scarlet fever, in order to save the school, and while in a highly infectious state is said to have travelled in at least three public conveyances. Under such circumstances the possibilities of the disease spreading are enormous, and the only wonder is that so many people escape. We may also refer to some correspondence on "cigar-ends" which has likewise appeared in the *Standard*. "A smoker" recommends that all cigar-ends, etc., should be placed where they can be readily seen and picked up by poor people or that they should be collected and given away wholesale. Such a suggestion is to be most strongly condemned from most points of view, and more especially from the medical. Most medical men have seen diseases of the worst type accidentally acquired through drinking out of an infected cup or smoking an infected pipe, and to encourage the smoking of other people's cigar-ends is at the best to encourage a disgusting practice, which may often end disastrously to those who indulge in it. —*London Lancet*.

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Li Hung Chang.

IT would seem that "The Heathen Chinees" can instruct us in many other things besides "poker," if we only view him in the right light. It was amusingly instructive to read that although Li Hung Chang had been ordered by his emperor to visit Cramp's ship-yard during his recent visit to this city, he failed to do so, because it would have interfered with his afternoon nap. Only seven hours in Philadelphia, this wise Chinaman devoted two of them to rest, even to the neglect of an imperial mandate.

It makes one smile to picture in his mind the peacefully-snoring viceroy within, the personification of common sense, and the curious, hungry, thirsty, nervous, energetic, bustling crowd without, waiting on his slumbers; the foolish crowd waiting to gaze upon the sensible unit. The energetic, active, go-ahead, pushing, thoughtless, worn-out bundle of nerves, known as the average American business-man, would probably call Li Hung Chang lazy, but the accumulated civilization of thousands of years has taught these Chinese what the word "*civilization*" really *ought* to mean.

Li Hung Chang realizes that he can live only once, and he wants to live as long as possible, and he knows that to "live long" he must "live slow."

But it is not only this man whose life teaches this lesson; the same lesson is constantly set before us in the lives of all

really and truly great men and women. All “*level-headed*” persons, all those endowed with superior intellect, are thoughtful and careful of health ; it is only those of inferior mental calibre who neglect it.

Read how Li Hung Chang will break away from any company, or any occupation, every night at 9.30 for bed ; it is only the poor, foolish, commonplace individuals who will allow social exactions to rob them of rest and sleep.

Nor has this “*laziness*” interfered with Li’s *material* success, for rumor has it that he is the richest man in the world.

Elimination.

THE conviction is growing very strong with us that much ill-health and discomfort is due to faulty elimination. He must understand that the human body, with all its marvellous phenomena, is, after all, but the visible, tangible, active manifestation of the transformation of organic matter. It is an unstable compound in that its component parts are continually undergoing change. Unlike the tree, the human body is not constantly adding to its bulk throughout the entire period of its existence, for, during mature life, perfect health implies neither loss nor gain of bulk ; it calls for the same weight daily, it requires that elimination shall equal ingestion, and if it does not something is wrong ; not necessarily seriously wrong, but *ideal* health is not with such body.

Roughly speaking the appetite is a guide to the amount of ingesta required ; not, by any means, an infallible guide, but an approximate one, and the only one *practically* available, without too much dangerous concentration of thought on self.

Not so with elimination ; we have no ready means of determining how much should be eliminated and how much we are eliminating ; hence does it become a matter of considerable importance that we should be sure that we are eliminating enough.

Roughly speaking, we can, perhaps, say that if a healthy person of mature age is gaining in weight, he is not eliminating enough, and *vice versa*.

The practical point that we are anxious to bring out is that, complete elimination of waste being essential to health, it is very essential that the eliminating organs should be kept in good

working order, and two simple prescriptions may be commended for this purpose.

(1) Exercise by walking.

(2) Cleanliness and friction of the skin. Of course, the lungs, bowels, kidneys, liver, and many other organs are concerned in the elimination of waste, and complicated directions might be given for the care of these organs, but the older we grow and the more we learn of the laws of health the simpler do they become to us and the more do we come to realize how easy it is to have good health, if one will only have a little common sense. A daily walk of five miles, with a daily bath and friction of the skin, will satisfactorily solve the problem of elimination.

The Elixir of Life.

WHEN, some years ago, Dr. Brown-Séquard announced his supposed discovery of the rejuvenating potency of certain animal extracts, the old men of the world were electrified by this seeming promise of everlasting youth. But they were doomed to disappointment; the idea did not rest upon a solid foundation and it crumbled into oblivion.

From time immemorial the mind of age has ever longed for the "secret of youth," and has time after time impulsively grasped at the straw of promise, only to be swept on in the current of unnecessary decrepitude.

None of the "elixir-vitæ" promises have ever been based upon common sense or science, hence they have all failed of results; they have been empirical assertions, captivating because desired, but absolutely void of merit. It must be evident to the reasoning mind of any reasonable individual that all efforts to transform old age into youth are but visionary and utterly incapable of practical realization.

But while it is absurd to look for a fountain of "perpetual youth," experience has demonstrated to us that it is not only not unreasonable, but practically feasible to put new vigor into the decrepit frame of old age, and to postpone for a considerable period the inevitable termination of individual human existence.

This cannot be accomplished by the use of any elixir, of any secret or mysterious agent or agency, but by efforts directed in the channel of reason, nature, and common sense.

We have written much in this journal about the paramount influence of the nervous system, and it is in the thorough recognition of this influence that our “elixir vitæ” has its foundation. Our idea, briefly stated, is that old age, or decrepitude, is very often the direct result of a deficiency of nervous force, and that by increasing the production and improving the quality of this vital necessity, the individual so treated is, to a degree, rejuvenated and his life prolonged. In other words, by improving the working capacity of the nervous system we thereby increase the vigor and prolong the life of the human machine. That this is not merely theory, we have proven by practical results in many cases.

Fashion versus Common Sense.

THE late distinguished Dr. D. Hayes Agnew, of Philadelphia, once made the assertion that in a conflict between fashion and common sense, fashion will conquer every time. The truth of this regrettable fact is forced upon one who has the opportunity of enjoying these magnificent autumn days at Atlantic City. Fashion has decreed that the season here shall commence in January; nature lavishes here her choicest gifts in October, November, and December, yet nature is neglected because fashion rules.

It is, to us, simply inexplicable why the wealthy, leisure class do not flock to this favored locality at this most delightful of all periods of the year. The atmosphere is simply indescribably balmy and attractive; the best hotels are open; the ocean is most attractive; the maddening crowds of the summer are gone, and there is about everything and everybody an air of peace and contentment that can be found in such perfection nowhere else.

The official statistics of the Weather Bureau give us these two most important facts,—

(1) During the months of October, November, and December in the years 1890, '91, '92, '93, and '94, there were 151 cloudless days at Atlantic City as against only 116 for the same period in New York City.

(2) During this period there were 63 foggy days in New York City and only 5 in Atlantic City.

These two facts alone (abundance of sunshine and almost entire absence of fogs) should be enough to conclusively demonstrate the claims of Atlantic City as an autumn resort.

We do not pretend to make this an elaborate, scientific article on Atlantic City as a health resort; we are merely giving utterance to the thoughts suggested by the climatic surroundings in which we live, thereby fulfilling the mission of this journal, to bring health and longevity to all who read and *heed* it.

New York City and Brooklyn are now within about three hours of Atlantic City, without change of cars, and it is to us incredible why more of the millions, crammed and jammed into these two cities, do not more frequently run down here during these delightful autumn months.

Atlantic City offers accommodations suited to all, from the palatial Garden Hotel (surpassed nowhere in the world), with its perfect system of combined heating and ventilation by means of hot-air furnaces and open wood fires in bedrooms, halls, and parlors, insuring a constant circulation of pure, warm air, infinitely preferable to steam heat, from a hygienic point of view; its famous *chef* from the Waldorf, in New York, and perfection of service; the Windsor, Traymore, St. Charles, Haddon Hall, Shelburne, Dennis, and Brighton, all first-class hotels, to boarding houses at five dollars per week, all can find accommodations suited to their means, while the sunshine and ozone are free to all.

It is true that "common sense" is the rarest of all senses, but let us all try to cultivate a little of it, and let us reflect upon the manifold and evident advantages of occasional periods of relaxation during this season of the year when out-door life is so delightful. Go anywhere that you please, for change and rest; but do not forget that your attention has been called to the pre-eminent attractions of Atlantic City.

Hard Times.

THOUGH, possibly, at first blush not appropriate for a health journal, yet there is a hygienic aspect to this question that warrants us in saying a few words.

What has become of all the money (asked a fourteen-year-old boy, recently); everybody says that money is scarce; where has it gone to; what has become of it; how was it lost, and can't it be found?

We replied that the money of the country was not lost; there

was just as much money in the country as ever, but those who had it would not spend it, hence it was not in circulation.

There is just as much blood in a dead as in a living body (we replied), but it circulates not, hence the body is dead ; so is it when money fails to circulate that the aggregation of bodies, the nation, is, so to speak, dead. Stagnation is fatal to everything, and, as a rule, it can in many cases be averted by a little common sense.

Let us take a homely but practical illustration ; doubtless, many of our readers are wearing shabby hats, fearing to spend the money necessary for a new one, lest the money may not come back ; let us suppose each individual man, woman, and child in this situation, and we can see how at least \$120,000,000 is kept out of circulation, because we are afraid to buy new hats. So on through every branch of human social requirements fear keeps money stagnant and injures health in proportion. Human beings are very sheep-like, and the masses follow a few leaders, and these leaders are the rich and wealthy. When this class closes its pocket-book and shows fear to spend, it is but reasonable that the wage-earner should follow the example set, as a consequence of which the financial circulation becomes weak and languid and the national body moribund.

We are not financiers, but we fail to see how this hoarding or stagnation of money can benefit any one, but as sanitarians we can see, and do see, how this continued financial stagnation and worry is making physical wrecks of thousands of human beings.

If the wealthy will commence to spend, the wage earner will have money to spend and will spend it ; circulation will be invigorated and hard times will be over.

It is the wealthy who inspire fear, and it is the wealthy who can dissipate it.

The Alcohol and Drug Habits.

THE laity have very little idea of how many persons are addicted to the use of drugs of various kinds. To the physician alone does this habit become manifest, and not always even to him. There can be no doubt in the mind of an observant physician that the American nervous system is in a very abnormal condition, the inevitable result of our abnormal methods of

life. We feel confident that we cannot be proven in error when we venture the assertion that there are very few normal nervous systems to be found in our American cities; in the young, by inheritance; in the mature, by folly; the same result is brought about, an unnatural condition of the nervous system, that creates a demand for unnatural supplies. We have already made our readers familiar with our firmly-held doctrine as to the universal potency of the nervous system in the production and maintenance of all the phenomena of life. Reasoning from this basis, it is easy to understand how a deranged nervous system will allow derangements of the whole system that will create a demand for correction. It is in this way experience teaches us that drug habits are formed. Nervous prostration, producing general prostration, calls for stimulants; nervous exaltation, producing general exaltation, calls for sedatives. Natural stimulants and natural sedatives are slow in action, hence, with characteristic American impatience, the impetuous American seeks the more rapidly-acting artificial stimulants and sedatives, with the inevitable result of creating the necessity for that which nature has not designed for the human body. We have already asserted our conviction that in functional nervous disorders the logical or reasoning powers of the individual suffer first; hence he is not capable of properly estimating the baneful results of the continued use of these artificial agencies.

Is it not logical, therefore, to contend that the rational method of treating and curing the opium, alcohol, or any other drug habit, is to so treat and restore to a normal condition the nervous system that the demand for these artificial agents will not be manifest. This fact is empirically recognized by those who treat these habits as a specialty, because they always add to their specific medication, all measures calculated to improve the general health, but, we fear, enough attention is not paid to what we consider the prime factor. According to our idea, the drug habit is but a symptom of functional nervous disorder that can be covered up, but not cured by specific medication that can be permanently cured only by restoration of the nervous system to its normal condition.



Ice-Water without Ice.

Here is a wrinkle, how to get ice-cold water in places where there is no ice. Wrap a porous jug in wet flannel; wrap it all around, leaving no place exposed to the air; place it, filled with water, in an open window exposed to all the air there is. Keep the flannel wet. In an hour the contents of that jug will be as cold as if they had been iced.—*Bul. Pharm.*

Low Temperature Pasteurization of Milk.

Dr. Rowland G. Freeman recommends the Pasteurization at a temperature between 65° and 70° C., for the following reasons: It destroys almost all the ordinary air bacteria which occur in milk. It destroys the bacillus tuberculosis, the bacillus typhosus, the bacillus diphtheria, and many other pathogenic bacteria. It causes no change in the taste of the milk, and avoids those chemical changes which are produced by higher temperatures.—*Archives of Pediatrics*, August.

Father Darcy's Witty Retort.

Concerning the celebrated Father Darcy, probably the greatest wit of that witty nation, Ireland, it is related that he once visited the palatial mansion of a perfect specimen of the *nouveaux riches*, who lived in the neighborhood of Dublin, at the invitation of its pompous owner. He was shown all over the house, his host taking great pains, as is habitual in such cases, to keep the witty and observant priest well informed as to the cost of all the beautiful things he was shown. Finally, after making the complete tour of the *château*, the library was reached, its tremendous shelves groaning under the weight of thousands upon thousands of volumes, resplendent in the most magnificent bindings. Here they seated themselves, and the host said, with a sigh of snobbish exultation,—

“ Well, father, I have brought you here last, because this is my favorite room. The other rooms maybe give pleasure to my

wife and my daughters, but this is my place,—right here among these books, who are my friends. And these here on the desk (pointing to a score of ultra-looking volumes) are what I may call my intimate friends.”

Father Darcy got up and examined one of them, when a broad grin spread over his good-natured face, as he said,—

“ Well, it’s glad I am to see that you never cut your intimate friends.”—*Milwaukee Journal*.

The Poisons of Alcoholic Drinks.

It is a very commonly accepted opinion that the injurious effects from the use of alcoholic beverages are due to the adulterations. Many temperance advocates make this a strong reason for not using spirits.

Recently a prominent physician condemned with great severity the use of spirits to which various poisons had been added. He enumerated several of these poisons and seemed positive that here was a source of danger overlooked before. Dealers in spirits have found this an excellent theory from which to prove the purity of their products and the risk of buying others from a rival dealer. A number of enthusiastic reformers have made exhausting chemic analyses to discover these dangerous adulterants, but without any results. One man spent \$2000 in procuring samples and analyzing them in New York City, but failed to find anything more than water and some cheap coloring matters. The Massachusetts Health Board examined this theory years ago and gave it up, contenting themselves with the examination of bitters and proprietary drugs and the amount of spirits which they contained.

Notwithstanding the failure to find any of the so-called adulterants, the idea has been kept alive and repeated, as if it was a fixed fact. Recently the profession has been treated with circulars, containing certificates of a chemist who writes M.D. after his name, in which he announces that from a most exhaustive search he has been unable to find any poisons in a certain brand of spirits. Then he volunteers that this was unusual and rarely occurs in the most reputable forms of spirits. A few weeks ago this subject came up before the Royal Commission on Licensing Laws in Session in London. This government commission, composed of eminent statesmen, physicians, and busi-

ness men, have been taking testimony on all phases of the drink question, with reference to license, from which they will report to Parliament the changes advisable and necessary in new laws. Dr. Bannister, the deputy principal of the government laboratory, was called on to give testimony concerning the causes of drunkenness affirmed to be due to the adulterations of spirits. He stated very positively that in the examination of thousands of samples of spirits, the only adulteration was water. That adulteration of spirits by any other substance was practically unknown. Also that age rendered spirits more harmless was a delusion. The supposed maturing of spirits by which the fusel oil was driven off was untrue. He asserted that there was no difference in the physiologic effects of spirits made ten years ago and to-day. Certain alcohols were the same irrespective of age ; also it was a mere question of quantity, not of quality. The alcohols of commerce used in beverages were nearly all the same and had the same physiologic action. One of the commission was a distiller, and a rigid examination followed, concerning beer and various mixed beverages, which brought out the fact that alcohol was the only poisonous substance in any of these mixtures. Other very curious facts were stated relating to beverages said to be free from alcohol and contain nutrient and medicinal properties which in nearly all cases were fortified with spirits concealed in some form. Physicians who discuss the alcoholic problem and believe in danger from adulterations, will have to abandon this delusion or make some original analysis to prove their statements. Manufacturers and dealers who claim prominence and purity must do so by showing a small per cent. of water.

Evidently there are many truths to learn in this field.—
Journal of the American Medical Association.

Mental Geography.

The most populous country is Oblivion. Many go there ; few return.

The largest river is Time.

The deepest ocean is Death.

The region where no living thing hath habitation is called Yesterday.

The most highly civilized country is To-day.

The highest mountain is called Success. Few reach the top save those who watch sharply for the passing of the spirit of the mountain, Opportunity, who carries upward all those that seize hold of him.

The region where no man hath ever set foot is called Tomorrow.

The greatest desert is called Life, and it hath many oases. These are called Hope and Ambition and Love and Charity and Home. And of them all the last is the most beautiful. Besides these are many others, smaller in extent, whence the travellers obtaineth refreshment during the weary journey through Life.
—*Our Young People.*

Chloroform versus Psalms as an Analgesic.

It was in attendance on a young primipara. She suffered very much and chloroform was administered. She duly appreciated it, as will be seen.

Her mother, a very pious and sympathetic old lady, remarked to her, "My daughter, when I was in labor, I always got a great deal of relief by repeating the twenty-third psalm. Now you repeat after me:"

Mother: "'The Lord is my shepherd, I shall not want.'"

Daughter: "'The Lord is my shepherd, I shall not wa'-wa'-wa'! I want some chloroform, mamma! Please don't bother me just now with psalms.'"

Danger of Leprosy from Russian Immigrants.

According to reports from Germany the commissioners of immigration and quarantine physicians of this country should be especially vigilant in the examination of Russians who come to the United States. The famous Berlin physician, Professor von Bergmann, who was recently consulted by the officials of the German health department, declares that a large number of the Russians who enter Germany with the intention of proceeding to America are affected with leprosy. The increase of the loathsome malady in the western provinces of Russia has become so alarming that the German government has ordered the immediate establishment of lazarettos at various points along the Russian frontier.

The Man with the Blues.

Few persons have the art of having the blues without inflicting them upon their friends. The consequence is that the average man makes himself a perpetual nuisance, a spoiler of dinner parties, and good cheer in general, says the New York *Evening Sun*. The view that it is better to be honest and show how you feel is an absurd one. This is one of those cases when it is imperative in the individual to play the hypocrite. It doesn't do to act as a germ centre for the diffusion of misery. If A is unhappy, his condition is not bettered when he has reduced B to the same condition. Ever blessed is the man who is always the same. It does not matter what reasons he has for depression; for he manages to turn a smiling outside towards the world. This is a feminine accomplishment. Men have less of the art of concealment than women. This is one reason for the subjection in which woman holds humanity. The very knowledge that she does not feel as she looks only increases the mystery that surrounds her.

The Hygiene of the Face.

The March number of the *Edinburgh Medical Journal* contains an abstract of an article from the *Medical News and Circular*, in which the writer remarks that to a very large proportion of the human race in civilized countries the face is, under the designation of the complexion, the subject of considerable and painstaking interest. Even those most exempt from vanity would prefer to have a physiognomy not readily identifiable by a more or less symmetrical crop of pimples; and a congested nose is not regarded as a thing of beauty even in an omnibus driver. Yet, he says, in spite of this general feeling in favor of a normal complexion, ignorance and carelessness between them wreak havoc, and it is the exception to meet with cheeks that have seen more than twenty summers which do not betray traces of ill-treatment. Apart from indigestion and constipation—two potent factors in the ruin of a naturally healthy complexion—there are various forms of mismanagement which conduce to blotchiness and pimply deformities. Among them must be ranked the practice of washing the face with hot water, a widespread form of self-indulgence in cold weather. The hot water, especially when reinforced by

a course of unduly alkaline soap, removes an unduly large proportion of the natural fat of the skin, leaving it with a roughened surface, which is very apt to excoriate or "chap," and requires more frequent washing to keep it clean, owing to its catching the dust. Nothing, says the writer, probably does so much to age the skin as the frequently repeated ablutions with hot water, and this may explain why the dainty French woman prefers to smear off the grime with the corner of a handkerchief steeped in glycerin, knowing by experience that good, honest soap and water will, in the long run, prove detrimental to the preservation of a healthy skin.

Unhygienically Laid-Out Cities, and Up-Stairs and Down-Stairs Mortality.

An American investigator, writing of the Berlin tenement-houses, tells us that the mortality in the garret-dwelling class is greater than in the cellar-dwellers. The greater fatality among the garret-renters is ascribed to the greater strain to which they subject persons who have to climb the stairs, as well as to the greater extremes of temperature found under the roof. The latter must enter as a serious mortality factor in case of illness, as the extreme coldness of the night must often be the direct fatal cause in many badly-ending cases.

It is also a mistake to imagine that all the foul or injurious elements in the air in a building must of necessity reside on the lower levels. Many of the most injurious gases to health and life tend to rise upward; passing through the spaces in the wall they reach the attic or garret-chamber. I well remember an old building that was drained by a wooden conduit running the whole length of the house into which all the waste-pipes emptied; by the decay of this trough the sewage was allowed to saturate the ground, and although an abominable air escaped from every outlet from underneath the main or lower floor, the first floor apartments were free from any odor, the second floor rooms were slightly malodorous, but in the attic it was simply insupportable. A plumber in attempting to remedy this was soon overcome with sickness at the stomach and headache, so that he was obliged to quit work. The upper part was rendered supportable only after the old wooden sewer was replaced by a vitrified pipe, and after the soil under the house was well purified.

All town flats should have the blocks and lots so situated that all sewers should run *from* the house and not under it, as is too often the case. For this purpose there should be a conveniently wide alley in the middle of each block, where all the gas, water, and sewer connection should be made, and where, when possible, these should be placed in tunnels so as to be easily accessible without the digging and upturning of the soil. In places where the drain has to travel from the rear of the house, and underneath an uncellared building to the main sewer in the street, it is of necessity so placed that a leak cannot be discovered nor remedied until considerable harm to health or life has resulted.

To avert this uncivilized and undesirable result, every State should possess a law by which no town plat intended to be inhabited by the public could be filed for record unless with the endorsed approval of a State sanitary engineer, showing that all sanitary requirements have been fully considered. The moment that a person plats out a city or town the public health should be first considered, and this should become at once the concern of the State.

Streets and alleys should be arranged with the requirements of the climate. Where sunshine is made indispensable to health by nature of the latitude, streets running east and west should not be less than 100 or 125 feet in width. No building should be so high that it would throw a shadow more than half-way across the street at noon in winter. With wide streets and open parks at intervals for breathing-places, serviceable alleys and no sewers running under the length of the house there would be less sickness, less criminality, less mortality, and more sound physical as well as moral Christianity.

It is better to look to the sanitary outlay of a town, to the physical and psychic influences of the tenements, than to spend ten times the amount in hospitals, asylums, jails, and penitentiaries.—*Pacific Medical Journal*.

Unique, Serviceable.

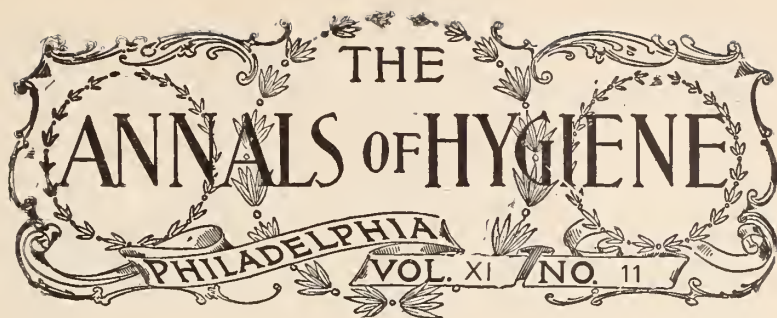
Our esteemed contemporary, *The Nursing World*, sometime since offered a series of prizes for the best form of bedside record for use in taking notes in cases of sickness.

Of course, there were many competitors and as many designs submitted, and though prizes were distributed, none of the examples were considered as perfect in themselves alone, so Dr. J. Edmund Brown, the editor, conceived and carried out the idea of selecting from all of the designs submitted the best points of each, making up a model bedside record. The result is the 64-page book before us, "The Nursing World Bedside Record for the Use of Physicians and Trained Nurses." The book is a fine piece of typographical art, printed in two colors, with a day and night record to last through a six weeks' case of illness. This record contains, date, day of disease, nurse's name, and with ruled columns for time, pulse, respiration, temperature, two lines for nourishment and medicine, and two lines for each entry for notes on action of heart, condition of mind, pain, chill, sweating, vomiting, condition of wound, bathing, etc., four spaces for *defecation*, time and character, *urine*, quantity, color, reaction, specific gravity, albumen, sugar, and sediment. At the left hand corner is the dial of a clock, the outside rings of which are printed in blue and the inside red.

This is for recording the hours of sleep, the space between the outer blue lines being shaded in with a lead-pencil or pen for recording sleep during the daytime and that between the two inner red lines for recording that at night.

On the second page is a blank for recording the necessary data with reference to the case itself, while page three shows the sample of night record filled out as a guide to its use. Page four is devoted to previous history or date of entry, while the following 42 pages are devoted to the *record* above alluded to. Then come three pages of temperature charts, followed by six pages for record of prescriptions, etc. Then we have two devoted to miscellaneous memoranda and two to subsequent history of the case.

This is all printed very neatly on writing paper, bound with a stout, fine grade manilla cover, with the Geneva red cross printed in color in the centre. The whole is encased in a substantial manilla envelope, making the most complete as well as the most elaborate and serviceable nursing record we have ever seen. The surprise, however, comes in here. It is published by the Imperial Granum Co., of New Haven, Conn., and may be received free from them upon application.—*The Prescription*.



COMMUNICATIONS.

How I got ready for Europe. A Story with a Hygienic Moral.

BY MISS E. F. ANDREWS,

Macon, Ga.

THE experiences detailed in this paper are necessarily somewhat personal, but as they contain a physiological moral that needs to be pressed home upon every brain-worker, I will venture to give them, even at the risk of falling into the bad taste which a too free use of the pronoun *I* always implies.

A most important part of getting ready for Europe is, as everybody knows, raising the money. This I undertook to do, though already burdened with from six to eight hours a day of severe mental drudgery, by adding to my other vocations the preparation of certain literary work, of which I happened just at this time to have a flush of orders from some of the magazines.

But I had made up my mind to go to Europe the following summer, and as I had a theory that work never hurts anybody, but only worry, I set out to earn a holiday, and test my theory at the same time by undertaking an amount of extra work that it would have puzzled a person with nothing else on his hands, or rather on his mind, to accomplish.

However, I carried my point. I was to sail from New York the second week in June, and before the end of the first my last lot of stuff was ready for the printer. I had earned my holiday,

surely, and felt as well satisfied with myself as "Little Jack Horner," when he

"Put in his thumb,
And pulled out a plum,
And said, 'What a good boy am I!'"

For I had sat in my corner and gathered a great lot of plums in the shape of bank-bills that made my wildest dreams a reality. What did it matter that long before my task was accomplished I began to be harassed by continual headaches, and was often forced to go to bed before midnight, in sheer desperation, because my tired brain absolutely refused to act any longer? "No matter," I said to myself, "the rest, the change, the glorious holiday in store for me will soon put an end to all these little disorders."

And so I worked on at the rate of sixteen hours a day until brain, nerves, and, worst of all, stomach began to rebel. When the stomach goes on a strike, it is as serious a matter as when the cook gives warning, so I called in a physician to patch up a truce between us, and then returned to work, only to take to bed again in a little while with a low fever, from which I had not recovered when the day appointed for setting out to New York arrived. But no matter; a little rest, I thought, would soon set me right, and the doctor advised a change of air. "You will begin to feel better before you reach New York," he said, hopefully, "and then, the sea voyage! that will finish the business for you."

Yes, it did; and it nearly finished me, too. Oh, that sea voyage! My friends had all prophesied such wonders from it that I was even beguiled myself into expecting a miracle, and though I knew, from sad experience, that a sea voyage had never failed, when I was well, to make me ill, yet I argued, with the fatuity that sometimes possesses lunatics and invalids, that now I was ill it would doubtless make me well. So impressed was I with this logical idea that I determined to forestall the blessings of the transatlantic passage by taking a steamer from the nearest port to New York. It was well I did so, for the first twenty-four hours of that preliminary sail swept away my last delusion with regard to the sea, and did much to resign me to the disappointment in store.

Some people get over sea-sickness when they land, and some of us, alas, don't! Heaving memories of the deep followed me ashore,

and when I took a cab and began to rattle over the cobble-stones on my way up-town, my emotions became so overpowering that I was obliged to lean out of the window more than once to give expression to them, regardless of the crowded electric-car that always made it a point to stop alongside and take on a passenger just at the moment when my feelings were most irrepressible. However, I reached my destination at last, or what was left of me did, and was turned over to the doctor and the nurse for the next three weeks, Europe being now literally "out of sight" to me.

When I got up again, it was to make a tour, not of Switzerland and Italy, but of sanitariums and health-resorts, in the weary endeavor to patch together and get into something like working order again the shattered wreck of what had once been a fairly stout and serviceable physique.

I need not describe the kind of life led in these places ; some of you know it, perhaps, only too well already. Can you ever forget that inexorable nurse with the cup of barley broth, or beef-tea, that must be poured down you every two hours, as if you were a stuffed goose, or a turkey fattening for the Christmas dinner? Suffice it to say, there was some difference between this sort of thing and a pleasure trip abroad ; yet, when the cost came to be counted up,—the money-cost, I mean, for the cost in suffering and in wasted time and energy can never be told,—it fell very little short of all that I had earned by the reckless overwork which had so completely defeated its own object.

The moral of this story needs no pointing. It proclaims itself, and suggests a new reading of the old problem, "What shall it profit a man if he shall gain the whole world and lose" . . . what makes the world worth having?

The Penalty in French Quarantine.

Death is the penalty for breaking through quarantine, France, according to a law passed in 1822 and still in force. A peasant from the Pyrenees who had returned from Buenos Ayres in a yellow fever ship and had scaled the lazaret walls at Pauillac in order to get home sooner, had just been on trial for his life at Bordeaux. Though his offense was clearly proved, the jury naturally acquitted him.

Prenatal Culture.

BY EDWARD BUMGARDNER, A.M., M.D.,

Lawrence, Kan.



THREE things besides our wills have made us what we are,—heredity, prenatal influence, and early environment. Attention to these three things is necessary to the advancement of humanity. The importance of the last one is acknowledged by all parents, and a great army of teachers is employed to assist the parent in this direction. Evidence is not wanting to remind us of the truth of Dr. Holmes's statement that "this body in which we journey across the isthmus between the two oceans is not a private carriage, but an omnibus."

Closely analogous to the law of heredity is that of prenatal influence. Heredity is the tendency of children to become like their immediate or remote parents. By prenatal influences we mean those which affect the inborn child by acting upon its parents. "Elsie Venner," perhaps, did more than anything else to set the world to thinking along this line. Until that "medicated novel" was written medical men had ridiculed the idea, which has since been demonstrated by observation, that the action of the mother's mind during pregnancy influences both the mental and physical development of her child. A woman who witnessed the removal of a metacarpal bone from the hand of her husband soon afterwards gave birth to a child which had the corresponding bone missing. In the popular mind such stories accounted for many deformities before the potency of such causes was recognized by scientists. It is not yet understood just how such mental excitement on the part of the mother acts in interfering with the child's development, but the fact is now admitted by all who have given attention to the subject. This, however, is not all that should be included by the term prenatal influence. Aside from the mother's influence during pregnancy, the child is a composite photograph of its parents at the time of conception. Heredity has done its part when the parents are chosen; prenatal influence is left to stamp permanently upon the child the temporary physical and mental states of the parents. Their volun-

tary actions determine largely the physical, mental, and moral calibre and inclination of the child. The right of the child to be well born places a great responsibility upon both father and mother. Nothing but the most perfect development possible for them to attain will fulfil their obligation to posterity. Without detracting from the responsibility of the father, it may be said that the most sacred relation in life is that of motherhood. The months which precede the beginning of this relation should be dedicated entirely to the new life. The expectant mother's dress, exercise, habits, thoughts—*her whole life*—should be ordered with a system that will conduce to perfection in the child. Diet is worthy of careful consideration. The food must be abundant and must contain all the chemical constituents necessary to a natural development. A well-known book of advice to women insists upon their living, during gestation, upon food and drinks that are destitute of the lime-salts. The reason assigned is that parturition will be less difficult if the development of the bones has been prevented. Granting that the bones would develop properly after birth, though entirely uncalcified at that time, the effect of such a diet upon the teeth would be deplorable. The crowns of the temporary teeth should be almost entirely calcified at birth, and these teeth and the first permanent molar will always be defective unless calcification has begun before birth.

The development of humanity would be rapid if every mother would make her life what that of her children should be. Good food, pure air, systematic exercise, cheerfulness, congenial occupation—*a perfect life*—will direct the child towards a still higher perfection. Every expectant mother should have her surroundings as pleasant as possible. When circumstances frown upon this the cultivation of noble thoughts and the contemplation of a worthy ideal will work wonders in the development of good and strength and beauty in the next generation.

It may almost be said that the mother can choose the life-work of her unborn child and give him a genius which will make him a success in that particular calling. Napoleon was made a warrior, Zerah Colborn a mathematician, Flaxman an artist, and Mozart a musician by the exercise of the maternal mind in a particular direction, and prenatal influence will do as much for any child under like circumstances. The ability to make the ideal of to-day the possibility of to-morrow brings a responsibility

which cannot be evaded. In every department of life forces are at work moulding the world which is to be. All future generations will be, to a great extent, what we of the present make them. No one is guiltless who is willing to let the world be governed entirely by the momentum of the past. The direction of natural forces into the proper channel will bless all future ages. Few things will benefit the world more than the study of prenatal influences. There is no more proper subject for investigation and none will give more profitable returns than the one which teaches the possibilities of the crowning glory of womanhood.

Foods in Disease.¹

BY GEORGE FISK, M.D.,

Demonstrator of Anatomy, University of Bishop's College, Montreal, Canada.



THE varying conditions of the human body in health and disease exert such a powerful influence on digestion and assimilation that a systematic classification, so useful to the busy practitioner, must necessarily be incomplete and imperfect; or, on the contrary, so elaborate as to be impracticable. The classification of foods, according to their physical properties, source, or chemical formation, is very good in studying the foods by themselves, but in studying foods with regard to disease, a classification, designed to group foods according to the rôle they take in the formation of the human system, is to be desired. As the great objects of food are tissue-formation and force production, a classification of foods as acting in one of these ways may prove practical. Chemistry shows that the nitrates are occupied largely in the formation of muscle, the phosphates contribute to the formation of the brain, nerves, and to some extent of the bones, while the carbonates are the main source of force. Let us place the foods as acting in one of these three ways, according to their chemical formation,—viz.:

- (1) Muscle formers,—*i.e.*, nitrates.
- (2) Nerve and brain formers,—*i.e.*, phosphates.
- (3) Force producers,—*i.e.*, carbonates.

¹ Abstract of paper read before the Montreal General Hospital Clinical Society, March, 1896. From the Canada Medical Record.

The material for muscle-formation is found largely in the cereals and animal foods, the percentage varying from 6.5 per cent. to as high as 34.6 per cent. Among the grains, wheat has 14.6 per cent.; barley 12.8 per cent.; and oats 17 per cent.; while peas and beans have about 25 per cent. Butchers' meats vary from 17.5 per cent. in pork to as high as 35 per cent. for ham, most of them showing about 20 per cent. Fish show a smaller percentage. The material for nerve and brain formation is found most abundantly in fish. Most fish contain from 3 to 7 per cent., salmon heading the list with 6 to 7 per cent. Grains contain a fair amount. Barley has 4.2 per cent.; oats 3 per cent.; and wheat 1.6 per cent. The phosphates in barley and wheat are deposited on the surface of the kernel, just beneath its hard covering; but in oats it is distributed evenly throughout. The pearl-barley is robbed of much of this layer of phosphates in the process of milling, only 0.2 per cent. being left. The flake-barley retains much of this layer of phosphates, and consequently is much better for porridge. Butchers' meat contains about 2 per cent., and ham has 4.4 per cent. In fruits, dates are richest, containing 4.5 per cent. Beans contain 3.5 per cent. The force-producers are made up principally of the carbonates, —*i.e.*, the carbohydrates (or starches and sugars), and the hydrocarbons (or fats and oils). The carbohydrates form a very large percentage of the grain and some vegetable foods, and by their ready oxidation save much wear of the tissues, although they do not readily enter into the formation of tissue. If we consider, then, that all foods, or the component parts of all foods, act in one of these three ways, our care should be to select those foods which best replace the loss in any special case. Here a knowledge of the constituents of the various foods is of vital importance, but this is not all that is required. A selection from the various foods which contain the required elements must be made according to—

(1) The ease of digestion, and resulting percentage assimilated.

(2) The value in tissue-formation.

(3) The effects of the residue, or waste, on the system.

The consideration of the first opens up a wide field in the preparation and cooking of foods in order to obtain a large percentage of nutrition from the food. Yeo, in speaking of the partial assimilation of vegetables containing a large proportion of

nitrogenous substances, says, "As large a proportion of albuminous matters as 17 per cent. may be wasted, while not over 3 per cent. of the proteid matter of animal food remains undigested." Proper preparation of these vegetable foods will remove this trouble to a great extent, yet it is quite evident that the great mass of cooks do not prepare many vegetable foods rich in nitrogenous products in a manner to obtain its full value. To illustrate, it is well known that the horse extracts more nourishment from oats than man does from the meal, as his powers of digestion are greater. If, however, the oatmeal be thoroughly cooked, from eight to twelve hours, a much larger proportion is assimilated, as the oatmeal granules are broken up and prepared for digestion. It should be a standing rule that wheat and oat porridge should not be boiled for less than eight hours, and on cooling it will form a tender gelatinous mass. Barley porridge is an exception, and a short time (fifteen minutes) suffices to cook it sufficiently.

Much that is valuable in vegetables is lost by faulty cooking. Potatoes peeled before boiling are robbed of their potash salts, which lies just beneath the skin. During the process of boiling the potash passes out into the water, and is thrown away with it. Carrots lose their valuable iron in the same way if sliced, and beets are said to "bleed to death" when the skin is broken. In acute and serious diseases the alimentation is more directly under the physician's supervision, resulting in a more correct preparation of food. Certainly the greatest aid to the physician in the improvements in modern dietetics is the predigestion of food. Its value in both acute and chronic diseases, especially of the alimentary canal, is hardly to be estimated, and the methods of feeding infants have been completely reorganized by it. Not to enter upon a lengthy discussion of the methods of giving predigested foods, I will mention a few facts that are easily overlooked by the uninitiated attendant in regard to nutrient enemata. It is a good standing rule that all albuminous foods should be digested before given as enemata, for, experimentally, albumen is shown to be excreted by the kidneys unabsorbed when injected into the rectum undigested. The practice of giving nutrient enemata with a common Davidson syringe, with a rubber or metal nozzle, cannot be too strongly condemned. Irritation of the bowel, possibly hæmorrhage, and imperfect absorption are the result. A long, pliable rubber tube should be used ;

a large, velvet-eyed catheter does very well, and this should be passed well up the rectum to the sigmoid flexure. About eight inches of tubing should be passed up in the child, and about ten to twelve inches in the adult. There is a good anatomical and physiological reason for this, as fluids absorbed from the sigmoid flexure and upper part of the rectum are carried to the inferior mesenteric vein through the superior hæmorrhoidal and sigmoid veins, and so on to the liver through the portal vein. The veins from the lower third of the rectum pass directly to the inferior vena cava, consequently all proteid matter absorbed from the lower one-third of the rectum loses the further digestion in the liver so vital to its assimilation. If injected into the sigmoid flexure it causes less irritation, and there is less liability to rejection.

In considering the digestibility of foods their compatibility should be considered. By incompatible foods, I mean those foods which demand a widely different length of time for the completion of gastric digestion. Apples take one and one-half hours, while beets or cheese take six hours. As quickly digested parts of a meal are ready for intestinal digestion they are passed on from the stomach, leaving the more tardy parts to complete digestion. It is quite obvious that if gastric and intestinal digestion are going on simultaneously for some time both are retarded.

The second division for consideration in the selection of food—viz., their value in tissue formation—is one that is frequently underestimated. Nature always accommodates herself as far as possible to circumstances, and employs whatever material is brought to her for renewing tissue waste. It is quite evident that if inferior material is furnished, the resulting new tissue is of poor quality. This is equally true in mental or physical training, and amounts to a maximum among teachers and trainers. Scrofulous or rickety children show in the various tissues the result of improper food. With regard to what foods make the best tissues there is room for much discussion. Some hold that flesh food is not allowable for man, while, on the contrary, others hold that flesh is all sufficient. Thompson remarks that “a man cannot perform more actual muscular labor upon an exclusive diet of animal food than of starchy food. He requires abundant animal food to replace the general wear and tear of muscular tissue, but the energy for muscular contraction is not derived from nitrogenous food, but from carbohydrates, the

former being used merely to keep the muscles in a state of healthy equilibrium. He who is physically feeble, and who lacks muscular power, cannot restore that power by an exclusive nitrogenous diet. A man fed upon nitrogenous diet without vegetable food may not work as well in daily labor as when given a fair proportion of the latter; but, on the other hand, he is better fitted for sudden arduous exertion than are exclusive vegetable feeders." Hence a mixed diet is the rational one for man.

Bauer says, "The material effects of albumen and of fat in the system are in a certain sense opposed, for the former increases the tissue waste and, secondarily, the oxidation, while fat induces the opposite effect." Hence the beef (lean) and bread treatment for obesity.

Some authorities claim that an exclusive vegetable diet has a tendency to increase the deposition of salts in the tissues leading to arterio-sclerosis; but the evidence in this is not at all conclusive. On the other hand, a very large percentage of centurians were very sparse meat eaters.

In considering the effects of the residue, or waste, on the system, I shall define the waste as that part of ingested food which passes off undigested, or is undigestible. The amount of undigested food which is thrown off varies according to the amount of food ingested at a time, and the condition of the food. In many poorly prepared vegetable dishes rather a large percentage of digestible material is thrown off owing to its being protected by indigestible cellulose. If cellulose is added to animal food, digestion is interfered with. The carbohydrates in wheaten flour, rice, macaroni, etc., are utilized to within 0.8 to 1.6 per cent., whereas as much as 8 to 18 per cent. of undigested residue passes out of the body from such food as black bread, potatoes, and the like. Moreover, hard ligneous substances, such as the bran of black and brown bread, provoke, by mechanical irritation, active intestinal peristalsis, which soon removes these substances from the action of the intestinal juices. For this reason, oat or wheat porridge is a good laxative when cooked only for a short time, while barley porridge is good in cases of diarrhœa. When large quantities of food are taken at once a larger percentage of digestible material is passed undigested. In the case of fats, however, large quantities may be taken without any increased percentage in loss. In considering the nutritive value, vegetable

foods are as a rule more bulky than animal foods, hence tend to evacuate a greater amount of undigested residue. This is important in considering the food in cases of intestinal lesions.

In order to facilitate and abbreviate the consideration of the dietetic treatment of each disease, I shall group them into two main classes,—acute and chronic; and after considering briefly the main line to pursue in each, shall pass on to consider some minor points which may be of some small practical value.

In all acute troubles the diet should be strictly limited to a fluid, or semisolid, diet, which will be almost entirely digested. Foods having a large percentage of residue are contra-indicated, particularly in enteric troubles. Water is most easily assimilated, and consequently is the best vehicle for conveying foods into the system. It is also invaluable in washing away the nitrogenous *débris*, which is increased in quantity owing to increased metabolism. In the acute cases, where the fever is high, it is considered well to aim at preventing the increased metabolism of nitrogenous tissues by supplying albuminous foods, which are consumed in their stead. Emaciation is to some extent limited in this way, and the patient's strength is thus reserved.

I will pass over without comment that universal food, milk, which is so valuable in all acute troubles, and will consider a few points regarding farinaceous gruels. In a certain percentage of cases, a milk diet is but poorly borne, and at best soon becomes tiresome. A discriminate use of carefully-prepared farinaceous gruel goes far to supply the need in these cases, and probably are of more dietetic value than the great majority of meat broths, which, in nutritive value, are little more than a saline solution, with some gelatine and extractive matters. Stomeyer feeds his typhoid-fever patients largely with oaten grits boiled for three hours without sugar. In some forms of enteric fever, with great emaciation, farinaceous gruels are strongly indicated. They must not be given too sweet, and a little cream or lemon-juice may be used instead of sugar. It is often advisable to add a tablespoonful of malt extract, or some of the prepared foods, as Mellin's, Ridge's, etc. Some object to these gruels, on the ground that they cause tympany. If this is troublesome, some of the difficulty may be removed by predigesting the gruel.

In chronic diseases the diet differs very largely with each affection. In order to prescribe a dietary for a patient, a careful analysis of the condition present will suggest the requisite ele-

ments to remedy it. On comparing the foods having the necessary elements, a selection should be made with some regard to the occupation of the patient. If the patient is an educated person, and has been following a sedentary life, using his mind more than his body, a selection of foods having a large proportion of phosphates is advisable. If the patient is a laboring man, with muscles developed more than nervous matter, foods rich in nitrogenous material will more readily regenerate. If the patient is a young, poorly-nourished child, with a nervous, irritable disposition, and a suspicion of rickets, a diet rich in phosphates is indicated.

To the delicate neurasthenic lady, who has never developed her muscular system, and who is not called upon to resist cold, the nitrates and carbonates are not so necessary as to the convalescent school-boy who is preparing for his athletic games, to be indulged in regardless of heat or cold.

I dare say that it would be consoling to the school-boy to know that his overpowering appetite for all sweets is not a pernicious one, but a lusty call of nature for one of the most available force-producers.

In prescribing a course of diet, it is well to give as large a variety as the case will allow. In some chronic cases, such as diabetes and nephritis, the diet is unfortunately so limited that it must inevitably become tiresome. Some small variety can be gained in these cases by varying the form of preparing the food, introducing new flavorings, etc. In private practice it is almost impossible to carry out to a satisfactory termination many of the reputed diet cures for various diseases, such as the various "milk cures," "whey cures," "Koumiss cure," "grape cure," etc. Not a small factor in these cures is the change of climate and other helpful changes which usually accompany a course of treatment.

It is refreshing to see that in the most advanced training-schools for nurses, special attention is given to the culinary department. Nurses are thoroughly trained in the methods of preparing these various foods, and consequently eliminate any chance of serving their patients with food that will aggravate their trouble rather than nourish them. This is a step in the right direction, which I hope will soon be followed by the establishment of a chair of dietetics in our universities. To-day the student is instructed in the elaborate methods of preparing tinc-

tures and fluid extracts, and all the million and one drugs of which he is unable to remember even the names, and yet his course of instruction as to the value and action of the various foods is meagre in the extreme. He is not asked to write the formula or directions for preparing any special food; he has never prepared these foods himself, and for all the assistance derived from his medical studies he could not even say whether a food was properly prepared for his patient or not.

To the physician an exact knowledge of foods is the key to success in many cases; to the anxious mother, striving to prepare some tasty morsel, each fresh hint from the physician is seized with gratitude, and forms a further bond of union; and as to the sick, who can measure their joy at the appearance of some fresh article of food to their limited bill of fare?—*Canada Medical Record*, June, 1896.

The Gymnastic and the Athletic Era of Physical Education.¹

BY E. HITCHCOCK, M.D.,

Amherst College.



PREVIOUS to 1860, about the time of the late Civil War, the subject of physical education, or any special study of bodily care and development, hardly had a foothold among our educational problems, or in the community at large. In fact, boards of health in this country at that time had not been established. But with the vast number of exemptions from the draft for our army, and with the immense number of recruits who, because of poor physique and inability to undergo exposure and hard work, could not endure the discipline and hardship of a soldier's life, the thinking public came to ask, Why is this, and what can be done to better these conditions?

Probably the first step in this direction is to be found in the inaugural address of President W. A. Stearns, of Amherst College, in 1854, where he says, that "no course of education was complete without devoting special attention to secure a good development and health of the physical system." As a result

¹ Read before the American Association for the Advancement of Physical Education.

of his persistent efforts, in 1859 and 1860, a department of hygiene and physical education was established at Amherst College, and a professor was appointed with the same standing and powers as the other professors of the college. This was followed by the erection of a suitable gymnasium building and the introduction of a system of required physical exercise, and of oversight of the health of the students, which has been steadily maintained till this day.

This was a starting-point for the work of the college and school gymnasiums, which meant the light and required class exercise of dumb-bells, Indian clubs, wands, rings, and free body exercises, together with the voluntary use of apparatus very much after the pattern of German, English, and French gymnasiums. Added to this during the war were simply military company movements and the manual of arms. And as a natural consequence this led to the introduction of class competitions, prize exhibitions, and records of gymnastic feats.

For several years Amherst College went on alone in this new departure, with no encouragement from anybody, and with the criticism that it would be as impossible to require people to exercise in a systematic manner as it would be to compel them to eat, sleep, or believe in a particular religious creed, by the requirements of a curriculum or course of study. And yet in the course of ten years a few of the older colleges and the better preparatory schools found their way to putting gymnastic apparatus into a vacant room or hall, and encouraging the students to go to these places and regularly use the means for recreation. From this beginning the work has gone on, till now there is hardly a respectable college or fitting school in the country which has not, at least, its gymnasium; and very many of them have a physician or director, who has the immediate control of the instruction given and of the department.

Close upon the establishment of such departments at our colleges followed the gymnastic idea which has seized upon the Y. M. C. A. work. This means a physical director and a gymnasium wherever a reasonably strong association exists in the United States.

So much, then, for the gymnastic period of physical education, the era in which the public has been educated to the need of simple muscular exercise, and the supply of the means and men to carry forward along with the culture of the intellect this

primary necessity of a better care for and development of the body. This means the minimum supply of bodily exercise by which young men, women, and children in our educational institutions can hope to maintain and probably make better their bodily condition. And the good which this era has accomplished is seen in the decidedly better physique of our school and college people, the ability the better to sing and declaim because of a stronger body to make a better voice. A better carriage is seen in our youth as a result of these gymnastic exercises, and on account of the military element which to a small extent is a concomitant of gymnastic training. No one old enough to institute a comparison between thirty years ago and to-day will for a moment hesitate to notice a better and more vigorous, active, and earnest condition of physical life in our schools and colleges; and we who have been in the business for some part of this time shall surely claim, with no lack of modesty, that a goodly portion of this is due to the introduction of that department of education which cares for the body as well as the intellect. So marked is this result that the last thirty years might be termed the gymnastic epoch of American education.

This interest on the part of directors, leaders, and teachers in educational matters has led to the recognition of, and supplied the material means for, advanced instruction in these subjects. Among the later developments and the matured results of this more intelligent physical training we note an enlarged view of the true value of recreation, physical development, and out-of-door amusements. While the required in-door exercise, regular, methodical, and prescribed, has been, and must continue to be, fundamental, and a necessary requirement for the great mass of students, the very success of it has led on to better and more vigorous work for a large proportion of our students. Work in-doors at the gymnasium with apparatus, and a little military drill, is good, is an absolute necessity, and can be regularly maintained. Favorable conditions can always be commanded, because it is within doors, and is not affected by the weather. It will always reach those who must feel some compulsion before they will take any exercise. But this is not the natural or ideal form of exercise. Men like animals want air, sunlight, exposure to all the elements of nature, rain or sunshine, and a contact with mother earth. And in such exercise they should wear such clothing that they may move as freely as the animal in his native haunt. A

man may get simple muscular development in a gymnasium and be strong in arms, legs, lungs, and back, but he cannot get the real brawn, effective muscle, capacious lungs, a tough skin, and the best of digestion, or a really reliable heart, unless he gets more of the natural process of health from mother earth and her surroundings of air, water, temperature, ozone, and the actual touch of soil and grass. No animal even with the utmost care on the part of man thrives in the house. For who can take more care of our cows, horses, and dogs than do the owners, who count their money as nothing in comparison with them, and yet what a woe to us is tuberculosis in cattle and the many diseases of the horse? Man needs out-door discipline as well as that of its training masters in-doors, if he would secure the bodily condition and the physical power that make him the best man to conduct a business, to edit a newspaper, or to make the most effective use of high intellectual attainments in any calling.

Hence in the last few years have grown up the athletic sports which demand the field, the air, varied temperatures, and the sunshine, and the test of strength, skill, and sport between man and man. The races and competitions for speed and time, the feats, the sports, the capabilities of quickness and strength, go back for their origin as accepted necessities, to Greek and Roman times. And they have come in again to stay.

But foot-ball seems now to have a black eye, and because of some of its concomitants, with good reason. Because it has been abused by its friends, and by its backers has been debased to unworthy ulterior purposes, it receives much-deserved criticism.

Excess, perversion, and overdoing are eminently American dangers; moderation, self-restrained and rational attention to amusements which men enjoy, are rare virtues among us.

Probably any person competent to judge of physical education will assert that foot-ball, when its players are adjudged sound and competent to play by a medical director, and where it is governed by a reasonable code of rules, is a most healthful, vigorous, and valuable game for youth and young men. It requires not only physical prowess, promptness, alacrity, and steadiness, but also elements of mental acuteness, and even of moral stamina, which are excellent training for the problems of

thought and leadership in after life. To play foot-ball a man must look out for and protect himself. He must also be the aggressor against the other side, and so must hold his temper and learn withal to be righteous with his opponent. He must expect defeat again and again, and must meet it like a man. And these we claim are necessities for a greater part of the public conditions of all our lives, and whatever disciplines us for this work early helps us to be the better fitted for the stern work of life that assails us all at some time. But foot ball has its accidents and calamities. So does every sport and occupation of life. But we claim that dangers do not exist in foot-ball in any more excessive proportion than in a score of other occupations and amusements in life, when we consider the vigor put into the game, and the great strength of the men selected for these public exhibitions. Will somebody enumerate the accidents from bicycling, driving, and horseback exercise, and, remembering how little is said of these many accidents, contrast with this silence the publicity given to every accident on the foot-ball field? Let us remember that every foot-ball game is watched and all its details are published by the inevitable reporter, while the thousands of reckless riders and drivers are seldom brought under the reporter's eye. Foot-ball players are selected men. They have the best physique, the most wind, perfection of every sense, and vigorous hearts and circulation, and most of them are in such physical condition that harsh treatment is immediately repaired and overcome.

But foot-ball is the occasion of a great deal of roughness, brutality, gambling, and corruption, it is said. "Aye there's the rub." The superb game is degraded. Its victories are made occasions, by others than the players, for the indulgence of appetite, the undue display of college pride. Too much is made of victory. The game is not made solely a means for good bodily training and development, or for amusement and diversion; but everything is subordinated to the hope of beating the other team. It is the old Oxford and Cambridge struggle.

Mr. J. H. Choate once playfully characterized all our colleges as "fresh and salt water" ones, just as so many of the great cities and centres of power in the world are located on the sea, from which they derive so much of their strength and resources. So the two or three big educational centres must to a great degree dominate and set the pace for the rest of our universities and

colleges. And we unhesitatingly assert that were it not for the struggle between Harvard and Yale Universities for supremacy, we should hear but little about the horrors of foot-ball. All the younger and weaker institutions naturally look up to and expect much guidance and leadership from these old institutions. Oxford and Cambridge keep for old England by their emulation a higher tone of both physical and intellectual culture than if they ceased to vie with each other; and so in young America Yale and Harvard are keeping close to the mother country. And we believe that these two institutions—perhaps University of Pennsylvania and Princeton may be associated with them—can so arrange and direct the rules of the game and its associations, with its boisterous *éclat*, that the game may not bring down reproaches on their own heads, but may also allow the fresh-water cousins to enjoy and profit by it. There is no doubt that perfectly fair and unprejudiced judges, umpires, and scorers can be found, who with purified and strengthened regulations, and perhaps more of them, can keep the game within reasonable and healthful lines. And so we, “the colleges for the plain people,” demand of the leaders in education in this game, which is of such great value and service, that the local institutional pride and prestige may be set aside for the great good of the whole Yankee nation. And that such restraint, oversight, and authority be placed over the game that Springfield of 1894 cannot be reproduced under any circumstances, with, however, the perfect understanding that neither antagonist can allow “the pot to call the kettle black.”

At the same time the great public must learn that the era of gymnastics, regular and normal development of the body, has come, and must stay for the great masses, but that at the same time this very fundamental work demands a broader and higher growth of physical prowess, and that the world demands and can have the necessary spectacular exhibitions without brutality, coarseness, unfairness, or indelicacy, even. The demand of the public for better health, public and individual, more bodily vigor and power, is on us, and surely it is for us to recognize in the athletic age. The gymnastic era has done its work; now let the era of athletics come in and benefit us as much in the next ten or twenty years as the gymnastic era has in the past.

Health Boards as Disturbers of the Peace.¹

BY CHARLES MCINTIRE, A.M., M.D.,

Easton, Pa.,

Lecturer on Sanitary Science, Lafayette College, etc.



WITH a title as sensational as the one that I have ventured to announce for this paper, it may not be amiss to hasten the statement that no violent attack upon boards of health is contemplated. The great good accomplished through the official supervision of these boards, whether municipal or State, is so patent that he would be foolish who, at this late day, would asseverate the contrary. It is not necessary to attempt to enumerate the good accomplished nor to chronicle the unselfish labors of the men to whom all honor should be given, and by whom these things have been brought about. But, acknowledging the good, and wishing them greater usefulness and power, it may not be amiss to have some of their acts pass in review for kindly inspection, and to criticise, in a friendly manner, should errors or failings appear.

You are all familiar with the Oriental fable, where the Cholera, on his way to Bagdad, informs a dervish in the desert of his intention of killing 10,000 people with his plague. And, on returning from his mission, is met by the same dervish who accuses him of a much higher death-rate. The Cholera replied that he had kept himself well within his bounds, the excess was due to fear. Doubtless, if you have not read, you have all looked at that volume of goodly size by Daniel Hack Tuke, entitled "Illustrations of the Influence of the Mind upon the Body in Health and Disease." With the thought suggested by these illustrations in mind, may not a doubt arise that sometimes our health authorities in their efforts to warn, really alarm; wishing to awaken, they really affright; desiring to preserve peace, they really disturb it.

I have known in a case of diphtheria, where neither an appeal to gratitude for past favors bestowed, nor to greed for a present reward offered, was able to secure any one to perform the

¹ Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896. From the Journal of the American Medical Association.

household duties for the well, in a house where the proper isolation could be maintained in the apartments assigned to the ill. Of a husband who was not able to be with his wife at the death-bed of their son ; she must bear the strain alone, or he would be so quarantined that, not being subjects for public support, the proper supplies could not be brought to the imprisoned household. Of an arrangement by which the death of a child would be announced to a neighbor after the manner of the telegraphy devised by the political prisoners in Russian fortresses, as described by Mr. George Kennan, because no one ventured beyond the door, on which the dread placard was placed, to do a neighborly deed. Making an inspection for our State Board of Health in an outbreak of diphtheria, I inquired as to possible carelessness in isolation, and was told that the simple announcement of the presence of the disease was enough to keep every one away, regardless of what might be the ability of the family to properly care for the suffering.

I might multiply examples, but these are enough for my purpose. And I ask you that if this is the outcome of the teachings of our health boards, is it not a fair inference that one result of these teachings is to disturb the public peace ?

You all remember the scare attendant upon the last visit of cholera in New York harbor. Of the meetings of the health boards, their preparations and pronouncement, for inspection of trains, detention of the suspected, etc. One effect of that effort on the part of the State boards was to unceremoniously, let us hope not uncharitably, take a man from his comfortable bedroom in a certain Pennsylvania hostelry, to a covered porch, because he was attacked with vomiting and purging. The fear that the man might be attacked with the dread disease, and the business of his house ruined because of its contagious nature conquered every other feeling in the heart of the landlord. Fortunately the night was a warm one, and no serious result followed.

These are trivial incidents, no doubt, and some of you may be inclined to quote,—

“ Diseases, desperate grown,
By desperate appliance are relieved
Or not at all.”

And some to point to the fact, of which we are all proud, of the restricting the disease to the harbor whence it came and to

the communities bordering on it; or to the wonderfully encouraging statistics that demonstrate the decrease of communicable diseases through the employment of such agencies as are here criticised. Still others may deny the conclusion, and assert that these incidents are not an outcome of any action of the health authorities.

To the former objections, permit me to make clear that the contention is not for a disregard of precautions, but the unnecessary alarm to defend against a danger that does not exist; the exciting a dread of a hygienic bugaboo. The latter objection is a fair one. If such incidents as I have described are not fairly the results of the teachings of the boards of health, it is not only unfair, but unkind as well to even associate the two in the same paragraph.

As I examine some of the pamphlets prepared by our State boards for popular reading, I am reminded of a habit in dress of the worthy burghers of New Amsterdam as chronicled by that most careful historian, Diedrich Knickerbocker. These worthy heroes, you will remember, were wont to wear a half-score pair of breeches at one time. Whether these indispensable nether garments were placed one over the other at one time, or whether a period of time elapsed for one pair to become somewhat threadbare before another pair covered the sturdy limbs, the historian is not careful to state. If the latter supposition be the correct one, the resemblance suggested by the pamphlets is closer. At some time in the past the medical world was using an hypothesis as to the method of communication of a disease, and the sanitarian arranged his precautions accordingly. The world wears out the hypothesis and there is need for a change of procedure. There remains, however, the doubt of conservatism. May it not be possible, under some circumstances, no matter how remote, that the older attempts to express the methods of communication may still be true? What a risk may be run if every possible precaution be not taken. The old garment is not discarded although the new one is added, and some of the circulars are almost worthy the name of "Tenbroek." Does this seem to be an exaggeration? I quote a few paragraphs, first from some of these circulars prepared by our boards of health for the instruction of the citizen; secondly, from certain named physicians who have written for the profession. I use but a very few of the possible citations from the former, and only enough from the latter to demonstrate

that I have not restricted myself to the opinions of the few. I will then leave it to you to determine if my illustration is an apt one.

“Most of the so-called ‘contagious’ diseases are usually spread by means of atmospheric dust of which the germs of these diseases sometimes constitute a part. Consumption, diphtheria, pneumonia, influenza, scarlet fever, measles, whooping-cough, and small-pox are usually spread in this manner.”

“Diphtheria is spread by the sputa, saliva, and whatever comes from the throat and mouth of the patient, and by the dust which results from the drying of such saliva.”

“Diphtheria-poison has great vitality and may lie dormant in clothing, blankets, paper, and houses for weeks and even months. It seems to be able to travel in the air of sewers, and thus to pass from house to house; also to rise from the emanation of putrid privies and cesspools.”

“Close attention should be paid to the sources of water and food-supplies. If possible, only the purest water should be used. If there is any doubt about the purity of the water, boil it thoroughly before using it.” (From a pamphlet on diphtheria.)

“A general rule, applicable to all persons sick or well, is that the handkerchief should be looked upon with suspicion. They should not be used after any secretion from the nose has been permitted to dry upon them. After being used they should be put into a paper bag which may then have its top twisted shut, there to remain until put into boiling water.”

These are enough for our purpose, and it is not necessary to give the source of the quotations; they were selected hap-hazard from various pamphlets; had the circulars of other boards been used, essentially the same language would have been found. Nor is it asserted that everything quoted is open to adverse criticism; the general excellence of the suggestions makes the harmful portions all the more dangerous. The only arrangement attempted was to group several statements regarding diphtheria for the convenience of brevity in the discussion.

Permit me now to bring several quotations to your notice *à propos* to the extracts already read.

“The relation between imperfect drainage and the diphtheria poison has not yet been satisfactorily determined. Perhaps, as Thorne suggests, the faulty conditions produce sore throat of a benign character, which as in scarlet fever, affords a soil suitable

for inoculation of the diphtheria germ, when present in the air. Drains, too, he thinks may retain the virus received through the sputa and dejecta of the sick. This author states that no prevalence of diphtheria has ever been definitely traced to polluted water.”¹

“Diphtheria is a highly contagious disease, readily communicated from person to person. The poison is given off in the pharyngeal secretion and in the saliva, but not in the breath. . . . The virus attaches itself to the clothing, the bedding, and the room in which the patient has lived and has, in many cases, displayed great vitality. The disease may be transmitted by inoculation. The contagion does not seem to be widely diffused in the neighborhood of the patient. At the Montreal General Hospital we rarely had cases develop in the wards adjacent to those in which there were diphtheria patients in bed.”²

“There is no evidence that the disease (diphtheria) can be disseminated by the air for more than a few feet; it is usually necessary to come in actual contact with the bacillus at its lodging place in order to become infected, and unless it is propelled from the patient for some little distance by the patient in coughing, it is rarely taken through the medium of the atmosphere.”³

The *New York Medical Journal* quotes Flugge⁴ as saying that the bacilli causative of diphtheria perish when dried and converted into fine air-borne dust. Accordingly the danger of the infection being carried through the air is minimal. It is by direct contact that most harm results. Inanimate objects keep the contagion alive. In moist climates it survives better than in dry regions. If soiled clothes are kept in closed containers or in cellars, the germs there have a good chance to live and do harm.

Overcrowding and lack of personal cleanliness assist in spreading the disease. Common use of the same unclean spoons, dishes, etc. Decomposing filth piles (as such) and sewer gas are not causes. Houses where it has occurred are not so much to be feared as are the people who are unclean and careless.

“Wright and Emerson examined the dust upon the floor of the diphtheria pavilion of the Boston City Hospital and upon the clothing and persons of the attendants, to determine if the bacilli

¹ Osler, *Practice of Medicine*, First Edition.

² *Ibid.*

³ U. O. B. Wingate, *Journal of the American Medical Association*, November 24, 1894. In a paper read before this Section at San Francisco.

⁴ *Zeitschrift für Hygiene und Infektionskrankheiten*, July, 1894.

were present. Four cultures were made from the floor sweepings, and in only one did the examination reveal the presence of the Löffler bacillus, although other bacteria were present. In four examinations of the dust adherent to the shoes of the attendants, three showed the presence of the Löffler bacillus with other bacteria. Cultures were made from the hair of the attendants in four cases, with positive results in one. Examination of the margins of the dresses of the attendants, of the bedclothes, shirts, and finger-nails of the patients, were negative as regards bacilli, as was also the examination of the air of the pavilion. In two of the five examinations in which bacilli were found their virulence was slight.”¹

“The inhalation of sewer-gas wherever diphtheria prevails has been regarded as a common cause of this disease. For this reason the following investigations relating to the nature of sewer-gas are instructive and important. J. Parry Laws presented to the main-drainage committee of the London County Council the results of his investigations on the composition of sewer-gas. His examination, as well as those previously made by Carnelly and Haldane, showed that the air of sewers was much better than might have been expected. . . . The number of micro-organisms was less in the sewer air than in the outside air at the same time. . . . Moreover, the sewer air contained a much smaller number of micro-organisms than the air examined in domiciles. Laws found that the micro-organisms of sewer air are related to the micro-organisms of the air outside, and not to those in the sewage. . . . He also found that a considerable increase in the velocity of the air currents did not increase the number of micro-organisms found in the sewer air, and that the results of experiments were the same in small as in large sewers, and led to the belief that all micro-organisms in sewage air are non-pathogenic.”²

It is not necessary to unduly lengthen this paper with additional quotations. Admit that they are selected with the purpose of an advocate to further his plea and that other opinions are suppressed; enough is given to show that some physicians of good repute, when addressing the profession, do not positively state that diphtheria is usually spread by means of atmospheric dust and should be classed in this respect, as an air-borne disease, with

¹ Sajous Annual, 1895, Vol. I, p. 4.

² Ibid., p. 6.

small-pox ; that it seems to arise from emanations in putrid privies and cesspools ; or that it is a water-borne disease. And to the degree that such things are asserted beyond the knowledge and in an opposite direction to the trend of investigation, by so much is a needless dread aroused and the public peace disturbed.

One can easily see why this is done and suggest excuses for it. The burden of responsibility placed upon the health officer who has any fellow feeling for mankind is so great that he naturally prefers to take ten needless precautions than to run the risk of omitting to take one that is necessary. He fears that the teaching of the biologist and clinician may not include the whole truth, and, while he makes use of their teachings, he does not, on that account, entirely neglect other sources of information, and adds, it may be, that other knowledge whose fountain is said to lie with elderly ladies, for fear he may make a mistake. In much of this, I fear, he brings sanitation into disrepute and prevents the public support that it would otherwise receive, and fails to produce in the public mind that confidence which should always manifest itself.

Sanitarians are not alone among physicians in their methods of mingling science and sentiment. The history of medicine displays a grand march of hobbies and hobby-riders. Just now our steeds are agriculturally inclined ; we are in the midst of a time of weed-killing. The farmers in the region about my home have their fields at times invaded by sorrel (*oxalis stricta*), but they never think of entering upon a campaign of pulling them out root and branch. No ! they sprinkle the ground thoroughly with air-slaked lime and change the character of the soil ; then the weed cannot grow. In our anxiety to kill the weeds we suggest, in effect, that every one of us who may suffer from a slight coryza should carry a bale of pocket-handkerchiefs and a package of paper bags (preferably of waxed paper) and, presumably, a grip-sack ; for even the capacity of a small boy's pockets would not be equal to the emergency were the cold a brisk one. If you have ever had any experience with "hay fever," you will be able to testify of the added burden that this would be to those already heavily laden. At the same time so little attention is paid to the soil factor with suggestions along the line of hope and not despair. I am glad to note that a paper on this side of the subject was presented at the last meeting of the American Public Health Association ; may it be the harbinger of a renaissance.

But, shall we cry "Peace, peace, when there is no peace"? Assuredly not! Let our efforts not be for calming into false security, but rather into that state of mind that prevents a panic. Let us be scientific in all our processes, and it is scientific to admit a lack of knowledge when such lack exists. If we have become convinced of the truth of any supposed fact in medicine, let us act honestly by its teachings, laying aside all that is contrary. If we are convinced that typhoid fever is a water-borne disease, and rarely, if at all, communicated by contact, why insist that the dead be wrapped in a bichloride sheet or object to the transportation by rail for burial? Our train-robbers and train-wreckers, however vicious and debased, are not cannibals; and the risk of an accident whereby the body will be precipitated into a source of water-supply of any community is so remote that the most painstaking need not consider it. Let us be honest in our presentation of sanitary statements. President Lincoln's suggestion about the ability and inability of fooling the people is so trite that it need not be quoted; but it is true.

Let us be more vigilant than ever; pressing reform, acknowledging error, seeking to educate, striving to prevent. But science, not dogma; deductions, not presumptions nor assumptions, only should pass current. Not only safety but peace of mind should be our aim. Let us strive rather to increase our efficiency, and in striving remember that efficiency is never measured by the manifest exertion or parade in its execution.

Suburban Sanitation.¹

BY G. B. THORNTON, M.D.,
President of Memphis Board of Health.



WITH the growth and development of a city the necessity for a uniform system of sanitation is apparent, and suburban sanitation is equally as necessary, though to a superficial observer not so apparent. This general proposition is applicable to any city, and many cities outside of this State could be cited to prove the assertion. But for this occasion we may limit the discussion to the leading cities of Tennessee with the view of eliciting an

¹ Read at meeting of Tennessee Medical Society, at Chattanooga, July, 1896.

interest towards influencing legislation whereby those suburban communities which so desire may be provided with sewers and other facilities necessary to promote the public health and maintain a higher standard of local sanitation. These necessary appliances on a scale commensurate with the general good of an extensive area or district, sufficiently populated to be considered, can only be had and properly maintained by conventional action of the communities interested. Owing to the vastly-increased and highly-improved facilities for personal transportation, what were a few years ago remote, unoccupied localities are now thickly-settled suburban neighborhoods, to say nothing of the immediate suburbs of a growing city, where an infectious disease at once becomes a menace to the suburban population.

The sanitary appliances, such as sewers, public water-supply, street-cleaning service, garbage and house-waste removal, sanitary inspectors, and all of the necessary outfit of a well-organized and well-equipped public health service of a city is not complete in its beneficial influence unless coextensive with suburban districts or intelligently co-operated with by them as far as a street-car service extends. A system of sanitary police inspection, with the view of reporting and isolating cases of infectious disease, as practised by the city and county boards of health, are essential towards preventing the spread of such diseases. But many diseases of an endemic character, not classed as infectious, can be prevented by good local sanitation, or rather would not occur in the absence of unsanitary conditions, such as cesspools, defective house-drainage, damp, wet lots in close proximity to dwelling-houses, etc. The prevention of these conditions, except to a limited extent, can only be had by intelligent co-operation or concert of action by the whole community interest. Cases of typhoid fever, for example, or a low grade of continued malarial fever equally as insidious and possibly more prevalent in some localities, have occurred in some of the best houses of the most attractive suburban neighborhoods, traceable directly to drinking water polluted by underground seepage from a neighboring cesspool or privy pit in the yard, into which water-closets, bathtubs, and kitchen-sinks are discharged. Some suburban districts have the public water-supply mains extended through them, and many houses the plumbing and modern conveniences of the best sewered portions of the city, without public sewers or proper facilities for disposing of liquid refuse of any character. Water

is the best means of disposing of all liquid or semi-liquid house waste, provided a proper outlet is had for its final discharge. For the mains of a public water-supply system to precede the mains of a public sewer system is obviously wrong, as has been demonstrated in a number of instances by just such conditions. This is putting the cart before the horse, to use a common expression. It is commencing an important work at the wrong end. Water alone, without the pollutions incident to domestic uses improperly disposed of, whether on the surface or underground in built-up portions of city or suburbs, creates nuisances in more ways than one. Hence the importance of both underground and surface drainage at all seasons of the year. This is illustrated by stagnant pools along the beds of natural drains and low, wet places, which, if added to by pollutions of sewage and the deposit of silt, become veritable breeders of disease.

In the suburbs and outskirts of all cities are located various kinds of factories, slaughter-houses, stock-yards, milk-dairies, etc., around which but little, if any, regard is had to cleanliness and local sanitation. These are all necessary industries and create more or less trouble as population increases around them. To meet conditions of this kind a comprehensive system of underground and surface drainage, subject to inspection and regulation by official authority, supported by favorable public sentiment, can alone insure satisfactory results. The obstacles in the way of unincorporated communities to create and to maintain a public sanitary system adequate in extent and appointment is the inability to levy and collect a uniform tax for this specific purpose, even granting that a majority of the property-holders or residents are willing to the tax, unless some special legislation could be had for this purpose.

Be the scheme or plan what it may in a legal aspect, there must be co-operation between the urban and suburban communities to make it mutually beneficial. The disposal of sewage so that it is not offensive to individuals and deleterious to property interests is a serious question, and one that is now and likely to remain a troublesome one to those charged with its responsibility. The same physical conditions do not apply to all cities and their suburbs, nor is the temper and prevailing sentiment of the people of any two just alike, hence a different plan, both as to engineering and legal questions involved, should be adjusted to meet the necessities of each individual case. The problem of surburban

sanitation, together with a number of other questions, including all the police regulations of an incorporated town or city, have been solved by the extension of city limits. But in some instances this cannot be done, owing to an inability of the urban and suburban populations to agree upon all important questions necessary for such extension, though they may be practically a unit upon the one question of the desirability of preserving the public health, and that one question cannot be eliminated and treated separately from all the rest under existing laws.

For the purpose of illustration, Memphis and its suburbs will be cited as an example where suburban sanitation is now a seriously interesting question with the officials and many of the most prominent residents of the city and suburbs. Memphis has approximately a population of 60,000, and immediate suburbs or the territory within a radius of one mile an estimated population of 20,000. This is possibly the best sewered city in the State, and one of the best in the whole country. It has sixty miles of sewers in successful operation, fifty and a half miles of which are the new or small-pipe system, and discharge by two main outlets into the Mississippi River,—one below the wharf or main business portion of the city, and one into Wolf River near its mouth, above the business portion. The other four and a half miles are some old sewers built by private parties prior to the yellow fever epidemics of 1878 and 1879, but now owned by the city and included in its general system, which discharge by two outlets into the Mississippi River just above the wharf or steamboat landing. The history of this sewer system, including a technical description, its cost, maintenance, and utility, is worthy of careful consideration by the student of city sanitation. The system now embraces nearly the whole of the city, and has cost to date \$427,739.09, nearly a half-million dollars. The maintenance of the system, including repairs to sewers and flush-tanks, the cleansing of sewers, removal of obstructions, etc., cost for the year 1895 \$3,022.38, as shown by official report from the engineer's office. The work of sewerage Memphis was commenced in the spring of 1880, and has been added to each year, as circumstances would admit. By the end of this year (1896) it is proposed to complete the work as far as the city proper is concerned. This will cost about \$39,000 more.

The sewers of Memphis are an inestimable blessing to all classes of its citizens, and, though procured at a heavy cost, have

proved a good investment. The area of Memphis is only four square miles, with a population of nearly 60,000. It has three-quarters of a mile less area than Chattanooga, which has an estimated population of 40,000. Within the past seven or eight years the suburban population has increased relatively greater than the urban, and continues to do so in almost every direction. There are several reasons for this,—viz., cheaper property or lots for residence or manufacturing sites and to avoid the corporation tax, the extension of a splendid electric street-car system in eight different directions for several miles into the country, whereby people can be brought from their suburban homes into the city and *vice versa* in a few minutes at small cost. Regular and rapid transit is now a necessity for all growing cities, and sanitary science and its appliances must be used to successful ends to keep pace with a rapidly developing period or be a laggard in the grand march of improvement.

In 1895 there were sixty-one cases of scarlet fever, forty-one cases of diphtheria, and seventy-two cases of small-pox reported in Memphis. In the suburbs forty-two cases of scarlet fever, seven cases of diphtheria, and fifty-six cases of small-pox. This is a very unusual report for small-pox. Such as this has not occurred for many years, and is not likely soon to occur again, if ever. For the past year or two the disease prevailed to a greater or less extent in a number of cities, and in many country districts in several States, North and South. Incidentally it may be mentioned that Shelby County is well supplied with hospital accommodations for this disease, and very few cases were allowed to remain at their homes, but were promptly moved to the hospital, which is well located five miles from this city.

Through the courtesy of Dr. J. Berrien Lindsley, secretary of the State Board of Health, the following statistical information of Nashville, Knoxville, and Chattanooga is given: These cities should be, and doubtless some day will be, as much interested in suburban sanitation as Memphis is now. Nashville enlarged its corporate limits in 1890 and included an extensive suburban district. It has now an area of nine and a half square miles, and according to the report of Dr. W. W. Core, county health officer of Davidson County, has an estimated population of 87,754. It has forty-one miles of sewers and an electric street-car system which extends several miles into the country. For 1895 there was reported in the city 321 cases of scarlet fever,

eighteen cases of diphtheria, and — cases of typhoid fever. For the suburbs no estimate of population is given. An approximate or estimated number of 148 is given for scarlet fever, diphtheria, and typhoid fever, with thirteen deaths. These three diseases are reported together, and, though indefinite, answers the present purpose,—viz., to show the necessity of suburban sanitation, and that any infectious disease in the suburbs is a menace to the city. There are neither sewers nor public water-supply in its suburbs, nor is there any apparent interest to have them.

In regard to Knoxville, Dr. L. Jones Price, county health officer of Knox County, reports estimated population of city 30,000, and the estimated population of the suburbs—that is, within one mile from the corporation line—20,000, including North and West Knoxville, 10,000 more outside of these corporations. According to this estimate the suburban population of Knoxville equals the urban. The city and suburbs have an electric street-car service. The city has a public water-supply and sewers, but the suburbs neither, nor is either contemplated or desired by suburban residents.

Dr. J. L. Selman, health officer of Chattanooga, and Dr. T. E. Abernathy, health officer of Hamilton County, report estimated population of Chattanooga 40,000, and suburban population 15,000. They differ as to extent of sewers in Chattanooga. One reports $7\frac{3.5}{100}$ and one 35 miles, but agree as to no sewers in suburbs and none contemplated or wanted, though the suburbs have the public water-supply. Chattanooga has a steam and electric street-car service, which extends through its suburbs. Neither report cases of zymotic diseases, diphtheria, scarlet fever, typhoid fever, etc., in either city or suburbs. It seems no official mortality records are kept, or possibly were not conveniently accessible to these gentlemen for reference at the time reports were made to Dr. Lindsley. Chattanooga has an area of four and three-quarters square miles, is a manufacturing city and railroad centre, and in some respects one of the most enterprising and progressive towns in the State. It seems the question of suburban sanitation has not yet interested the people, but as the suburbs fill up and become more populous, the same necessity for sanitary appliances will arise there as in the city.

As suburban population increases in number and density around any city the same necessity will arise for sanitary appliances as exists in the city proper. All cities are sooner or later

confronted with these questions and have to provide for them in some way, either by corporate extension or concerted action under an agreed system and uniform health ordinances. Tennessee has a good system of county health boards, which should be encouraged by a strong public sentiment and co-operated with by all city boards. The good effect of this policy was clearly demonstrated in Memphis and Shelby County during the prevalence of small-pox in that locality the past winter. By prompt concert of action between the city and county boards of health an epidemic of small-pox was averted.

A PLAN MUST BE DEVISED.

To solve the question of suburban sanitation in Tennessee without extending the lines of existing corporations some scheme must be devised having the force of law, supported by approving public sentiment. But let the plan be what it may, the taxing power must be placed somewhere, either in a county court or by extension of the taxing authority of existing corporations beyond present limits, or to authorize private corporations for the construction and maintenance of sewers in unincorporated districts. In any event rules and ordinances of the city interested should apply over such sewered districts. This would involve compulsory house-connections and proper maintenance in good working condition of such connections between house and public sewer. A scheme of this kind would facilitate the enlargement of incorporated towns, and one, and possibly the most important, step towards extension would have been taken. The financial question of reimbursing a suburban district or private sewer company at an agreed valuation is easily done, as was done in the case of Memphis when it projected its general system by purchasing the four and a half miles owned by private companies before it built its present sewers.

Cold Bathing During Menstruation.

Cold bathing during menstruation is a beneficial measure, provided women become accustomed to it by bathing every day for eight days before. Hehzel holds that cold salt-water baths facilitate the menstrual flow, increase the duration of genital life, and increase fecundity.—Dr. Depasse, *Lancet Clinic*.

Hygienic Precepts and how an Epidemic was stamped out.¹

A REMINISCENCE OF PROFESSOR FRANK H. HAMILTON.



THE late distinguished surgeon, Frank H. Hamilton, M.D., is credited with the formulation of the following decalogue :

- (1) The best thing for the insides of a man is the outside of a horse.
- (2) Blessed is he who invented sleep ; but thrice blessed the man who will invent a cure for thinking.
- (3) Light gives a bronzed or tan color to the skin ; but where it uproots the lily it plants the rose.
- (4) The lives of most men are in their own hands, and, as a rule, the just verdict after death would be—*felo de se*.
- (5) Health must be earned,—it can seldom be bought.
- (6) A change of air is less valuable than a change of scene. The air is changed every time the wind is changed.
- (7) Mould and decaying vegetables in a cellar weave shrouds for the upper chambers.
- (8) Dirt, debauchery, disease, and death are successive links in the same chain.
- (9) Calisthenics may be very genteel, and romping very ungentle, but one is the shadow, the other the substance, of healthful exercise.
- (10) Girls need health as much—nay, more than boys. They can only obtain it as boys do, by running, tumbling,—by all sorts of innocent vagrancy. At least once a day girls should have their halters taken off, the bars let down, and be turned loose like young colts.

In the summer of 1866 there was an outbreak of cholera at the workhouse on Blackwell's Island. A full account of it is published, describing the conditions which led to it and how it was stamped out, of which the following is an abstract,—pertinently applicable to recurring conditions in that and other institutions subject to the same kind of management :

The first case recognized was on July 22. Three or four

¹ From the Sanitarian.

weeks before there was an epidemic of diarrhœa among the inmates. The weather was exceedingly hot, and it so continued during the two weeks following. Many of the cells were overcrowded, four persons in some cases occupying one cell 16 by 8 feet. Open buckets were used at night for the excreta, and these remained in the cells until morning. During the day most of the women remained within the building, sitting in the sewing-room without employment, while large numbers were crowded into a single room making hoop-skirts. A few only were employed in scrubbing, washing, etc. The men were occupied out of doors. The water-closets used during the day by the women were in two empty cells on the third floor of the building, in each of which were two or three tubs of the size of half-barrels, placed under properly constructed seats. These tubs were emptied at night into the river, filled with water and left out twenty-four hours, other tubs taking their places during the next day. Most of the day these closets were thronged with women, part of whom came of necessity, but many came merely to avoid work, and to meet and converse with their companions. The soiled clothes and bedding were put in water over night, sometimes piled up without water, and subsequently washed in hot water. Mush and molasses constituted the evening meal, and there was not a sufficient supply of vegetables. The bread was sour. During the month of July the water-pipes conveying the Croton water under the East River to the island were more than once broken, which in some degree interfered with the thorough cleansing of the island and the buildings. Such were the conditions in brief, when on "July 26, at midnight, the Asiatic cholera broke out with great violence in the workhouse." Sixteen cases occurred within the next twenty-four hours. The number of new cases rose and fell from this date until August 2, on which day there were reported thirty-three new cases, making in all up to this date 127 cases. At the time of the outbreak there were in the building 649 prisoners. Professor Frank H. Hamilton, at the time one of the visiting surgeons of Bellevue Hospital, was chairman of the Committee of Inspection of the Medical Board of Charity Hospital, including the workhouse, almshouse, and penitentiary. It had been his custom to make only occasional visits to the workhouse, and no report of the outbreak of cholera in the building was made to him until August 2, on which day, as already stated, thirty-three new cases occurred. Then, as now (as may be inferred

from recent action in allowing experimentation with nostrums on the patients without consulting the Medical Board), the Commissioners of Public Charities conceived themselves to be abundantly competent to direct everything appertaining to the material well-fare and use of those committed to their charge, without consulting the Medical Board. Nevertheless, Professor Hamilton took it upon himself to go outside of his sphere (as conceived by the commissioners) of merely attending the sick, and made a careful inspection of the building and its inmates. The findings were as above described. He *asked permission* of the board to introduce at once certain sanitary improvements. Observing apparent hesitation to accept his suggestion, "perhaps on account of the expense," the urgency of the case was pressed upon them, with assurance that if full authority were given him in the matter the epidemic would be arrested in three days. This was said deliberately and without fear of a failure, because the special causes of the epidemic were apparent to me, as they would have been to any other educated physician, and the remedies were within reach.

Before the close of the day authority was given to Dr. Hamilton to make such changes in the management of the various institutions upon the island as he saw fit. His orders were issued and began to take effect on August 3, but they were not in full operation until the 4th. On August 7 there was but one new case, "and the epidemic was virtually at an end."

THE CHANGES INSTITUTED.

(1) The women were distributed and made to occupy, as far as possible, separate cells.

(2) No buckets were allowed in the cells for excreta, and neither the doors of the cells nor the outer doors of the work-house were locked at night. Those having occasion to rise in the night were required to go to the river-side closets, to tubs placed outside of the building, or to the hospital.

(3) During the day none of the unemployed women were permitted to remain in the hospital; the hoop-skirt shop was closed and the women employed on this contract were sent into the grounds and allowed to sit in the shade of the building or of the trees from 4 to 8 o'clock P.M.

(4) The cells heretofore used as water-closets were cleansed and closed, all the men and women being required during the day to resort to the river-side closets.

(5) All clothes and bedding used by hospital patients were ordered to be removed promptly, and to be placed in large vats containing boiling-hot water, and not to be washed until they had been in the water several hours.

Through some inadvertence, the orders given for the management of the laundry were not literally carried out for several days. The clothing, instead of at once being placed in boiling water, was submerged in cold water for a few hours, often over night, and then treated with hot water. The result of this omission was, that of thirty-four women employed in the laundry, twelve died,—35 per cent. of the whole number.

(6) At breakfast, coffee was substituted for rye-coffee ; potatoes were added to the meat dinner ; rice and tea were substituted for mush and molasses for supper. The resumption of the mush and molasses at the penitentiary, a few weeks later, considerably increased the amount of diarrhœa.

(7) A large proportion of the cases being developed during the night, and most of the inmates, both men and women, being accustomed to the free use of stimulants, a "night-cap" was ordered for each person, composed as follows: Whiskey, one fluidounce ; tincture of capsicum, fifteen minims ; water, three fluidounces. M.—For those who had already some diarrhœa, tincture of opium, fifteen minims, was added.

(8) Stoves were placed in the rooms occupied as hospitals, and fires were kept in them constantly to improve the ventilation, the windows being kept constantly open.

(9) Disinfectants were employed freely everywhere they might prove useful. But cleanliness being enforced, there was very little of these agents used.

Quite a number of cases were noted where choleraic symptoms rapidly supervened upon a debauch, or the free use of alcohol under the impression that it exercised a prophylactic influence. Several of these were less than ordinarily exposed to recognized sources of infection. Of the nurses who were seized, a debauch had very uniformly preceded the attack. One nurse—who was very faithful in the performance of her duties—experienced choleraic symptoms on three different occasions, after having each time too freely taken whiskey to support her strength.

A Plea for Higher Education in Hygiene.



SAD case has recently come to light where a bright young man of 22 years has had his whole life blighted by contracting tuberculosis from a room-mate while attending one of the universities in Ohio. This room-mate had a marked case of consumption, even during the time the young man made a bedfellow of him, and is now in one of the Southern States not expecting to live.

The young man had won a fellowship, and had been given congenial work in his Alma Mater. He caught a slight cold, as he thought. There was cough and afternoon fever, failing appetite and losing weight, and then the verdict—consumption—and the advice to throw up everything and in the table-lands of the far West seek for an out-door occupation and health.

Questioned as to his knowledge of his room-mate's condition during their association, he said they often talked of the fact of his (the room-mate) having consumption, and he had advised him to get a broncho and be a cow-boy, little dreaming that he would soon be in a similar condition.

No precautions were taken by the room-mate to disinfect the sputa. Apparently neither of them realized that there was any danger in being so closely associated, and *none of the courses of study at the university gave opportunity of acquiring such knowledge.*

It seems strange that the most useful of all information—how to obtain and maintain a healthy body—should not be imparted to the young men and women who are leaving our colleges and universities.

The first duty of a State is to protect the health and lives of its citizens. This can be done only by teaching the individual how to protect himself. The State makes education free in order to protect and perpetuate its institutions, but is it not equally interested in keeping alive, for the longest possible time, those whom it has educated?

It is true that the State (Ohio) provides that “the nature of alcoholic drinks and narcotics, and their effects on the human system in connection with the subject of physiology and hygiene, shall be included in the branches to be regularly taught in the common schools of the State and in all educational institutions

supported wholly in part by money received from the State," but this is a temperance measure, and strikes at one only of the many avoidable causes of disease.

As a matter of fact, hygiene is not usually taught at all in the high schools or in colleges or universities. The subject is considered "food for babes," and the young children have their heads stuffed full of a good deal of nonsense concerning the *pathological* effects of alcohol and tobacco.

Incalculable good would follow the proper instruction of hygiene in all the higher schools of education, and the strongest possible plea should be made by all who are interested in true education for the appointment of a professor of hygiene in every college and university in the land.—*Ohio Sanitary Bulletin*.

Pure Air in the Gymnasium.



THE ideal gymnasium and the gymnasium most used by the ideal ancient athletes is the out-door gymnasium. There only can we expect an unlimited supply of fresh air and the full benefit of the action of the sun's rays. The shortcomings of an out-door gymnasium in our climate are great variations in the temperature, the changes brought about by the seasons, the possibilities of rain, snow, etc. These disadvantages we may overcome almost entirely in an indoor gymnasium, while, on the other hand, it is impossible to construct one with perfectly pure air.

Even if it is pure at the beginning of the gymnasium hour, shortly after the least and slightest gymnastic exercises the dust will rise from floor and corners, and the artificial lighting and heating, the respiration and perspiration, etc., will alter the constituents of the air in the hall. No artificial ventilating, though ever so ingenious, is capable of doing away with these evils. We know it is unwholesome to exercise in rooms with impure air. The lungs are called upon to do forced work, to expand in all their parts, otherwise indolent, to sustain the aeration of the quick pulsing and rapidly disoxygenized blood-current. In consequence there are all the more chances for microbes and other irritating substances to do harm directly or to settle in corners and other unoccupied spaces.

Out-door gymnastics here in most parts of the country is out

of the question, except during a comparatively short period of the year and when atmospheric influences do not otherwise interfere. Only such vigorous work as foot-ball, etc., can be performed in the open air during the rough seasons.

We are, therefore, compelled to turn to our in-door gymnasium, and it becomes one of our fundamental tasks to create a substitute for the open field at least as far as the purity of the air is concerned.

One can see all kinds of gymnasiums, from the luxurious palace-like structure to the little garret or the basement of an opera-house in the city and to the barn in the country.

It is not always the most comfortable places that are the most frequented, or breed the best athletic material. Years ago, when the German fugitives of 1848 introduced the first systematic training, their ways and aims were generally misunderstood and regarded with suspicion. Often they were compelled to defend their primitive gymnastic sanctums with their dear life. Their means and their influence were very limited; what wonder, if they felt happy to get along with any empty place that they could find, no matter whether there were ventilators and heating apparatus or not, not to speak at all of our recent modern improvements. Nevertheless, we must admit that there never was and never will be a more enthusiastic class of gymnasts. Times have changed indeed.

Physical training is an established factor; moreover, it is beginning to be fashionable. The little German societies of early years have grown, and some of them are to-day immense institutions. With the growth of the societies and with the spread of the cause over the whole country, the improvements must keep pace. Classes of 50 to 150, which we to-day can often see, need larger accommodations than a couple of the early enthusiasts would have required formerly. We now lay especial stress upon physical education of tender childhood, of the young ladies, and even of the mothers.

It thus becomes a most important duty to provide for ample room, for the most perfect salubrity of the air (ventilation), for a nearly uniform, wholesome temperature,—if gymnasium work is expected to do good. In short, we must imitate the out-door gymnasium and at the same time seek to avoid the latter's shortcomings.

The question of the air is with us most important. In the

first place it is necessary to provide for fresh air, for the highest possible number of windows, easily to be opened and closed, for ventilators and surface rooms (not basement accommodation only), and for the most ample admission of sunlight (not obstructed by high buildings or walls).

In the second place, it is of paramount importance to keep this air as pure as possible and to avoid the raising of dust. This can be accomplished through strict order in regard to gymnasium foot-wear, through frequent cleaning and sprinkling of the cocoa-matting, through regular washing of gymnasium floor and apparatus, and through the smoothest finishing of the walls, to prevent the adhesion of dust and microbes.

In the third place, we must provide for a frequent change of the hall-air, *during* gymnasium hours as well (avoiding draught) as *in the intervals*. The rays of the sun should only be interfered with where they would annoy the pupils. We insist that too much cleanliness cannot be practised inside gymnasiums; that impure, dust-filled air will harm all the respiratory organs and the vitality of the pupils not less than that of the teacher. A spacious building with plenty of doors and windows, a smooth wall, a hard wood floor, a moist mat, and—last, but surely not least—a conscientious janitor and an energetic instructor will keep the air in the gymnasium as nearly equal to the air out of doors as is possible. And only with these conditions, never otherwise, do we pronounce gymnastic work beneficial.—*Mind and Body*.

Hygienic Principles in the Prevention of Ear-Diseases.¹

BY PERCY H. FRIDENBERG, M.D.,

New York,

Assistant Surgeon, New York Eye and Ear Infirmary.



THE prevalence of acute and chronic naso-pharyngeal affections under local climatic conditions of rapidly-varying temperature and humidity, the frequency and danger of complicating diseases of the organ of hearing, and the common neglect of hygienic measures, which are, for the greater part, simple and effective, offer sufficient reason

¹ From the Medical News.

for my submitting a few remarks on the subject. Under normal conditions of health, the organism may give shelter to many microbes, some of them pathogenic in nature. The latter are held in check by the vital antiseptics of the blood, the energy of the cell, and the power of resorption and metabolism of the organs. A further defence is afforded by the impermeability to germs of the normal epithelium, and by the antagonism existing between different species of micro-organisms or their respective physiological products.

The commonest path of aural infection is from the naso-pharynx through the Eustachian tube. Under normal conditions the reflex action of swallowing causes the renewal of air in the tympanic cavity. If this automatic ventilation be disturbed, the consequences soon become unpleasantly apparent in a diminution of hearing. The physiological ventilation may become a source of danger, to which are added other and more violent reflex movements, such as coughing, sneezing, or vomiting. These reflexes overcome the muscular bar of the Eustachian tube and cause a sudden rise of air-pressure, which, though but momentary, is strong enough to force into the middle ear some material from the naso-pharynx, as mucus and any micro-organisms that may be present. As evidence of this, the frequency of middle-ear complications in epidemics of acute and subacute naso-pharyngeal affections may be cited; but without any mechanical assistance, pathogenic organisms may traverse the tube and produce the tympanic complications not unfrequently observed in pneumonia, typhoid, scarlet fever, and other infectious diseases.

Less frequently, but no less certainly, the blood carries the agent of infection to the affected organ of hearing, or inflammatory products may be transported and become lodged in the terminal blood-vessels of the middle ear, as is not unfrequently the case in septic endocarditis and in pyæmic conditions. Finally, we must not forget that a possible, although rare, mode of infection is offered by the presence normally, as observed by Zaufal, of pathogenic germs in the tympanic cavity, which may, under favorable circumstances, become virulently active. Besides these internal paths, the ear may become affected from without, as it most frequently is in disease of the external ear, and as complications of deeper parts. Injuries and inflammatory processes of the auricle and the meatus may affect only the external ear and the adjacent structures, or may cause general infection; again,

the inflammatory process often extends to the barrier between the external ear and the middle ear, with destruction of the drum membrane and rapid development of middle-ear inflammation. Even without perforation of the tympanic membrane, the pathogenic process may penetrate, by means of blood and lymph-channels, to the deeper structures.

A knowledge of the methods of aural infection should guide us in our therapeutic and prophylactic measures. First and foremost is the importance of a proper hygiene of the naso-pharynx, in health as well as in disease. The care of the mouth and pharynx is so habitual and its importance so obvious that it might seem superfluous to call attention to the necessity of keeping the teeth clean and the recesses of the mouth and throat free from all foreign matter. Unfortunately this is not the case. These manipulations are frequently neglected through ignorance, or they are performed at irregular intervals and in an incorrect and inefficient manner. A perfunctory brushing of the teeth on rising in the morning, and so-called gargling with a few drops of a mouth-wash are considered by many sufficient for the subsequent twenty-four hours, and the products of fermentation and decay, with the micro-organisms, are left undisturbed for a whole day. Besides this, the conditions for decomposition are made more favorable by the conditions of the mouth and naso-pharynx during sleep. The rational deduction is that the most careful cleansing of teeth should take place at night and again on rising, for in spite of all such measures, the buccal cavity will be found full of micro-organisms in the morning, and perhaps a less careful toilet of the mouth should follow each meal. If these simple, hygienic measures were systematically and energetically applied, especially in childhood, we might hope for fewer complaints of foul breath, weak stomach, or decayed teeth; not only this, but the mucous membrane of the mouth and pharynx would become toned and strengthened against many infectious diseases. The most important prophylaxis in any epidemic is the care of the buccal cavity. Lavage of the throat is so carelessly done as to be in most cases practically useless. The fluid at most rinses the mouth, and does not reach the back of the pharynx, the tonsils, etc. Besides this, the method is a false one and its results a failure. Tough mucus cannot be removed in this way, even if the fluid did reach the deeper parts. A more rational procedure is the pharyngeal douche. A small amount, not a mouthful, of

fresh, cold water should be used. The chin is now raised and the fluid allowed to run slowly back by its gravity without any attempt at gargling. When the fluid reaches the lowest part of the pharynx it causes a sudden, brisk, reflex contraction of the pharyngeal muscles, which, assisted by a forward inclination of the head, is amply sufficient to empty the contents of the mouth. This simple process may be repeated three or four times. By this method the lower portions of the throat are reached, and, above all, the energetic, spasmodic, muscular action effectually dislodges all tough adherent mucus. Where there is a tendency to catarrh or sore throat, antiseptic solutions may with advantage be substituted for pure water. In addition to these local measures, we must consider the value of regular exercise, fresh air, cold baths, pulmonary hygiene, and breathing exercises.

However we may be disposed to neglect these procedures in health, the presence of local or general disease increases our responsibility and the necessity of rational hygienic measures. Nasal or pharyngeal catarrh, whether idiopathic or symptomatic of measles or scarlet fever, is frequently complicated by acute middle ear affections. The disease brings with it the necessity of freeing the nasal cavity at frequent intervals, and the simple blowing of the nose, if violently or carelessly done, as is usually the case, may be a source of danger. It should be done as seldom as possible, as violent blowing only adds to the existing irritation and congestion. If this is not sufficient, the mucus must be made less consistent and removed by an alkaline douche. Both nostrils should never be closed at once, and no hair-pin or similar utensil should be used. Therapeutic measures, which occasion a local rise of air-pressure, such as Politzerization or the use of the Eustachian catheter, are distinctly contra-indicated during the acute stage of such affections, especially if there is complaint of pain in the ear. The pain often indicates that there is already a congestion or inflammation in the tympanic cavity, and these procedures may drive the infecting matter into the recesses of the mastoid with the most serious results. We must be on our guard in the case of infants and little children, and consider at all times the possibility of ear complications when restless sleep, peevishness, and crying might suggest intestinal parasites, colic, teething, or what not. Frequently a discharge from the ear is our first intimation of the real state of affairs. In such cases, as in the case of apathetic or comatose patients, in typhoid, pneumonia,

meningitis, and similar diseases, the ear-drum should be frequently inspected. In chronic affections of the naso-pharynx, aural complications are so frequent as to be the rule. Chronic hypertrophic catarrh, with adenoid vegetation in the pharyngeal vault, is notable in this respect. Digital exploration is usually the simplest and most effectual diagnostic method, as posterior rhinoscopy may be impracticable with unruly or frightened children. The local action of adenoid hypertrophies may cause a direct affection of the Eustachian tube by occlusion of the pharyngeal ostium and consequent retraction of the drum by rarefaction of air in the tympanic cavity, or their presence may cause repeated attacks of catarrh, which sooner or later extend to the middle ear. The breathing is affected markedly, and hearing not infrequently diminished. Although forced to operate in most cases, much may be done in mild forms by insistent local treatment. Direct application to the nasal passages of weak nitrate of silver solutions, or of iodine-glycerin, 5 to 10 per cent., act well in almost all cases when used at an early stage. The reaction may be severe, however, and for this reason it is advisable to apply the solution to one passage only in each sitting. The cotton pledget should be tightly wound on an angular carrier or forceps, and there should not be enough fluid to allow any dripping into the pharynx. Two or three days should elapse between each application. The nasal douche is decidedly inapplicable here, as in all cases of naso-pharyngeal obstruction fluid easily enters the Eustachian tube, and may be aspirated into the middle ear. Massage of the nasal mucous membranes has been advocated and good results claimed for it by several authors.

The use of a nasal douche should be governed by a few simple but stringent rules if it is to remain a beneficial measure and not become a source of danger. The bulb of the fountain syringe, if this is used, should be directed horizontally backward, not upward, the bag hung not more than one foot above the nasal passage. The head should be inclined forward slightly, with the mouth open, and the douche fluid slightly warmed. The nasal douche-cup or spoon is even better than a fountain syringe, or the fluid may simply be snuffed up from the palm of the hand.

The necessity of removing hypertrophic tonsils is self-evident as a prophylactic measure against ear-disease. Similarly, congenital fissure of the hard and soft palate should be treated.

A consideration of all the possible causes of aural affections

brings us finally to the communication from without through the external auditory meatus. Inflammation of the auricle or meatus may be propagated directly by extension or by transportation in blood- or lymph-channels. The custom of piercing the lobule for wearing of ear-rings has been responsible for many cases of this nature. A greater menace lies in the careless or incorrect cleaning of the meatus. The majority of instruments used for this purpose—ear-spoons of metal, rubber, ivory, or bone—are of doubtful utility, or absolutely dangerous. Small sponges on holders are a source of infection rather than of asepsis or cleansing. The ear-spoons, especially those of metal, easily cause abrasions of the epithelium and small erosions, which may become infected and result in furuncles or phlegmonous inflammation. The use of an ear-douche is but little better. The epithelium is soaked and macerated, and when dry becomes a source of irritation. Oil, glycerin, and other substances of a similar nature are inappropriate, on account of their tendency to become rancid. The most rational method of cleaning, which is perfectly thorough, may be accomplished by using a small tuft of absorbent cotton, not a large pledget, tightly wound about a blunt and smooth wooden toothpick, the end being left loose and fluffy. In case the cerumen is hard, the cotton may be lightly dipped in soap-water or moistened with a drop of ether. Another source of serious inflammation of the ear is the presence of foreign bodies in the external meatus, and more particularly unskilful or violent attempts at their removal. Instruments are never to be used in these cases, especially when the foreign body is hard or brittle, as they invariably fail to grasp, and push the offending object still deeper into the ear. Our sovereign remedy here consists in syringing, and is effectual in nearly all cases, unless the foreign body is very voluminous or has entered the ear with great force. Under these conditions extraction under a general anæsthetic may be our only expedient. Injuries of the ear not infrequently produce a rupture of the drum, whether caused by a blow or entrance of a foreign body, or by sudden change in atmospheric pressure. Here, too, the original lesion may be less dangerous than misguided therapeutic efforts. All washing, syringing, or instillations are contra-indicated, at least directly after the injury. If the rupture can be seen, a loose tampon of absorbent cotton is all that is needed. In case there has been a free hæmorrhage and our view is obstructed, the blood-clot may be gently wiped away

with cotton on a holder. The patient should be cautioned to avoid all procedures which would cause a rise of air-pressure in the tympanic cavity, and especially to use no force in blowing the nose. The use of syringes is unequivocally condemned. Prompt healing will generally take place under the aseptic blood-clot, if this be left undisturbed. Even after a discharge has begun, much more can be accomplished by dry-cleansing, by mopping with cotton or gauze, than by flooding the passage with fluid. The warning against syringing must be especially marked in case of serous discharge, where traumatic communication with the cranial cavity may reasonably be suspected.

Another source of danger, although of a less serious nature, is the common tendency to alleviate toothache or facial neuralgia by the use of hot oil, pledgets of cotton dipped in chloroform, oil of cloves, or other counter-irritants placed in the auditory canal.

In health we need also guard against the mechanical injury of the heavy surf at our sea-side baths. Complaint of fulness and pressure in the ear after bathing, with diminution in hearing, is usually due to the swelling of cerumen by the action of the water. The symptoms promptly subside when the wax has been syringed out. Even in case of an old perforation of the drum, the patient need not be deprived of the hygienic benefit and pleasure of sea-bathing. We need only suggest plugging the meatus with cotton, which has been partly dipped in oil. If we neglect this, the entrance of sea-water may be followed by an acute empyema of the mastoid, or by the relapse of an old discharge.

Hygiene in the Stable.



GREAT deal has been said from time to time about hygiene and proper sanitary surroundings in the home; about pure food, water, and milk as well as fresh air.

As our meat and milk, largely, if not wholly, comes from the stable, and as they are staple and important objects of food, it is important that the environments of the animals furnishing these articles of sustenance be as clean and free from disease-germs as possible.

The following excellent and practical article on stable hygiene will be found helpful to all who are seeking to have in

their homes and to furnish to their patrons the best and healthiest of all that is good. It applies equally to the hen-house :

Hygiene, which is defined to be that branch of medicine of which the object is the preservation of health, under the latest discoveries of science has come to be almost entirely embraced in cleanliness. At least, so far as cow-stables and their occupants are concerned, hygiene means cleanliness and cleanliness means healthfulness. The first step, therefore, towards securing healthful stables is to make them clean ; for, although uncleanness will not of itself generate any noxious diseases, there is no such disease that it does not invite, welcome, nurture, and stimulate when it comes. Filthy or unclean stables are like hot-beds to all stray disease-germs, stimulating and feeding them to vigorous growth. Foul air furnishes as ready and congenial a home and breeding place for disease-germs as filthy soil, and from being so much more mobile is far more effective in the spread of such germs. Therefore, the air in the stables must be made clean as well as the stables themselves.

Stable floors, in order to be made clean and kept clean, must be made of some substance that is approximately impervious to water, so that they may be washed off and dried out. Stagnant water in the soil is a favorite breeding place for disease-germs ; therefore every precaution should be taken to protect the stable floors from dampness and moisture.

Stalls, partitions, and all wood-work about stables ought to be kept sound and protected by frequent washing with lime. Rotten wood is another prolific seed-bed of disease. Much trouble and expense would be spared if care were taken in building stables to have all wooden sills laid down in water-tight cement, and all partitions protected with heavy coatings of tar, paint, or other water-proofing.

Disinfect.—Disease-germs are so minute, so insidious, so easily transmitted, so ready to slip into corners and hide away in the soil, that after the most thorough cleaning up with soap and water, it is always safest to thoroughly disinfect the entire stable in order to destroy every taint of disease. Among disinfectants there are two classes,—one for germs that live and are transported in the air, the others for earth-breeding germs.

For the air-germs there is nothing so good as fresh air and direct sunlight.

For infected floors or walls many substances are recom-

mended,—some to be used as liquids, some as vapors, some as powders. Of these, only the liquids are to be recommended ; the others are too troublesome and too dangerous.

It must be borne in mind always that all germicides are poisonous,—some more, some less. All are, therefore, to be handled with care.

The two disinfectants mostly recommended are—corrosive sublimate, in solution of 1 part to 1000 parts of water ; chloride of lime, one pound to five gallons of water.

Corrosive sublimate is a violent poison, and is but little if any more effective than chloride of lime, which is comparatively innocuous. For this reason it is much better to use the lime.

It is best applied with a common spraying pump, and should be showered freely over every part of the ceiling, walls, stalls, and floor of the stable. After the walls and ceilings are dry, a good coat of whitewash should be applied to them, the whitewash being made up with the chloride of lime solution.

Fresh air and sunlight are as essential to the preservation of health as cleanliness, and the utmost care needs to be taken either in making or mending stables, that both be provided. Plenty of light, good ventilation, and perfect cleanliness are the three essentials of hygiene in the stables.—HUNTER NICHOLSON, in *Jersey Bulletin*.

The Relation of Fruits to Health.¹

BY PROFESSOR WILLIAM R. LAZENBY,

Vice-President, Horticultural Section of the American Association for the Advancement of Science.



IN discussing the relation that horticulture bears to health, not physical health alone, but intellectual and spiritual health, have been considered. In like manner, the products of horticulture, as well as horticulture as a vocation or recreation, are taken into account. First, let us consider the effects of the use of our common garden and orchard products as a part of an every-day diet.

There is a great deal of talk about health and diet that is equally foolish and hurtful ; foolish because it subserves no

¹ Read at the Buffalo meeting, August, 1896. From the Medical and Surgical Reporter.

good end, and hurtful because it tends to fortify the pernicious idea that our bodies are in such wretched condition as to need constant tinkering, and that some sort of self-medication is a positive duty.

Like malaria, this affection is everywhere. How shall it be treated? In the place of this wide-spread delusion there should be an inbuilt conviction that there are certain articles known as foods, in the choice of which and in the quantity used each one has daily opportunity to exercise the virtues of common sense and moderation. But foods are not medicines.

A medicine is something which is taken into the body to produce a certain specific and unusual effect, the object being to counteract some injurious tendency or abnormal state. If taken when not needed, its effect is likely to be directly injurious. In order to maintain strength and vigor and repair waste, the normally healthy body craves what is wholesome, not what is medicinal. When a thing has real medicinal value it is almost certain to be unwholesome as a general article of diet. There is an old tradition,—even now quite generally believed, although gradually fading away,—that anything that affords us simple physical pleasure is dangerous, if not absolutely sinful.

So when one eats freely of fruits, he does not feel justified in simply saying he does so because he finds them agreeable; he likes and craves them, but is constrained to look wise and solemnly observe that “fruits are very healthy.” Some even go so far as the German prince, and have for each bodily ailment a different variety of fruit. The prince said, “Whenever I meet with any misfortune or affliction, and am disposed to give way to my grief, I order a young goose nicely roasted, and eat as much thereof as I can: I always find that I rise from the table far less unhappy.” Let us banish the idea of making a drug-store of our fruit-gardens and orchards, and cease looking upon the family fruit-basket as a sort of homœopathic pill-box!

“Blessed are they that hunger and thirst” can be said as truly of our bodily wants as of our spiritual necessities: not blessed because they shall be medicated, but because “they shall be filled,”—filled with what tastes good, with what gives genuine and lasting pleasure.

In satisfying our hunger for fruit—fruit that is well matured, juicy, and fine flavored—we get, perhaps, the highest form of palate gratification with the least possible digestive effort.

Our ordinary fruits contain the following substances in greater or less proportions :

- (1) A large percentage of water.
- (2) Sugar, in the form of grape and fruit sugar.
- (3) Free organic acids, varying slightly according to the kind of fruit. For example, the predominating acid is malic in the apple, tartaric in the grape, citric in the lemon.
- (4) Protein or albuminoids, substances containing nitrogen, which resemble the white of eggs, and are its equivalent in food value.
- (5) Pectose, the substance which gives firmness to fruit, and which upon boiling yields various fruit jellies.
- (6) Cellulose or vegetable fibre, the material that forms the cell walls, and which is found in all parts of plants.
- (7) A very small percentage of ash or mineral salts.

The substances named above are, with the exception of cellulose, essential constituents of a perfect diet. The percentages of the different nutrients are so small, however, that most of our fruit has little actual food value. For example, the nutrients contained in the strawberry, according to analyses made at the Ohio State University, are as follows :

Carbohydrates	8.0 per cent.
Protein . . . . .	.3 " "
Fat . . . . .	.0 " "

It has been estimated that the minimum daily ration of nutrients for a man of average weight, performing an ordinary day's work, is :

Carbohydrates	500 grammes, or 17.6 ounces.
Protein	118 " " 4.2 "
Fat	36 " " 2.0 "

A simple calculation will show that a person would have to consume about 200 ounces, or 13 pounds, of strawberries daily in order to obtain the proper amount of carbohydrates from this source.

In order to secure the necessary amount of protein from the same source, a daily consumption of 1400 ounces, or 88 pounds, of strawberries would be required.

This would be a task that even the most ardent admirer of this fruit could scarcely be prevailed upon to attempt. Take

another illustration from the vegetable rather than the fruit-garden. The nutrients contained in the tomato are as follows :

Carbohydrates	2.5 per cent.
Protein . . . . .	.8 " "
Fat . . . . .	.4 " "

Applying the same calculation as before will show that one would have to eat 500 ounces, or 31.2 pounds, of tomatoes each day for the requisite fat ; he would have to eat 525 ounces, or 32.8 pounds, for the necessary protein, and for the carbohydrates it would require 704.4 ounces, or about 44 pounds. In other words, if one should eat 44 pounds of tomatoes every day, he would consume slightly more fat and protein than were absolutely necessary for a day's supply, and just about the right amount of carbohydrates.

This demonstrates that, however valuable strawberries and tomatoes may be as a part of an every-day diet, they cannot be considered as foods. Their actual nutrient value is exceedingly low. In order to support life and maintain strength, strawberries and tomatoes must be eaten in connection with other substances which have more concentrated nutrients. Wherein does their dietetic value consist? Let us briefly consider. The qualities which render fruit and many of the more delicate garden vegetables wholesome, and cause us to have a natural appetite for and hence to enjoy them, are their acid juiciness and flavor. The juice is mainly water, but it comes to us in a grateful and refreshing form. The flavor is due in part to the organic acids already mentioned, but mainly to certain volatile oils or aromatic ethers. It is to these latter that those delicate characteristic flavors of various varieties of fruit are chiefly due.

Chemistry and physiology have taught us that, when these "fruity acids," oils, and ethers are taken into the body, they undergo oxidation, which process tends to lower the temperature of the blood, or at least to modify our temperature sensations, and thus correct or allay any slight feverishness that may exist. They also tend to keep the organs of secretion, the liver, kidneys, etc., in a healthy condition. We are justified, therefore, in saying that fruits are "cooling, aperient, and grateful." In our climate, subject as we are to rapid changes and extremes of temperature, passing abruptly, as we often do, from an arctic winter to a tropical summer, the physical system is naturally more or less debilitated.

In this condition we are predisposed to malarial troubles, particularly if we live where the drainage is poor. Fruits and acid vegetables are found to be good correctives for this debilitated condition of the system. The free acids of fruits, especially citric and malic acids, are highly antiseptic bodies. They tend to prevent disease-germs from finding a lodgement and development in the body.

The full beneficial effects of these acids are only to be found in mature fruits. Green, unripe fruits, although they have an abundant supply of acids, are usually injurious, on account of their indigestibility. This arises mainly from the coarse and hard condition of the cellulose. When fruits are perfectly developed and properly matured, the cellulose is soft and fine. We know that unripe fruit is not wholesome. It digests slowly, often ferments in the stomach, and is the cause of painful disorders. It is unwise to take into our stomachs that which will ferment and decompose; it is certainly no less unwise to eat over-ripe or wilted fruit, in which these destructive changes have already begun. The question is often asked whether such or such a fruit is healthy, even when the question has no special reference to the condition of the fruit itself. All fruits that are eaten ought to be healthy,—that is, they should be well matured, sound, and free from disease. As a rule, such "healthy fruits" are for most of us wholesome, although they are neither food nor medicine.

The best results possible from the dietetic use of fruits and vegetables come from eating those that are fresh, healthy, and properly matured, and which have been produced by our own skill and industry.

Morbid Shyness.

Before the British Medical Association Dr. H. Campbell read a paper on morbid shyness. He observed that morbid shyness was an exaggeration of a condition normal at certain periods of life, and enumerated its manifestations and the conditions which aggravate it. It was found in the members of families in which various nervous diseases existed and might terminate in insanity. It was found in both sexes, and the condition of isolation which it produced in those who did not appear to have the necessary strength of will to overcome it tended to produce morbid introspection and even melancholia.

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Newspaper Medicine.

WE heard recently of a healthy man who had his vermiform appendix removed so as to insure himself against the possibility of even having appendicitis.

Such assininity is the logical outcome of "newspaper medicine." It is not a commendable habit of the daily press to publish sensational medical articles, though we presume it must sell the papers, else they would not do so.

Still, to our way of thinking, respectable journalism has a higher duty than pandering to the morbid instincts of the masses; it should elevate and control them.

Medicine is not a science; it is an art; and it requires many years of training of a well-balanced mind that it may properly read, receive, comprehend, and logically reason upon medical subjects.

It is a well-known fact that during the first year of a medical student's life he is very apt to imagine himself the victim of each disease the symptoms of which he hears described, because symptomatology is such an intricate and misleading subject; certain symptoms, in certain relations and connections meaning much; the same symptoms, at other times, meaning nothing; hence one who is not well and thoroughly trained is not qualified to deduce rational or valuable conclusions from the reading of medical articles.

There has always been a low class of sensational newspapers that catered to the morbid by publishing these medical articles; but, of late, we have noted a tendency among the more respectable newspapers to follow suit. This is not wholesome, and logically results in such exhibitions of folly as we have here recorded. Newspaper hygiene is all right; we ask for and cheerfully accept the potent educational influence of the daily newspaper in the dissemination of the laws of health; but we beg self-respecting newspaper editors to refrain from using their columns for the publication of medical theories and speculations that can be rightly comprehended only by those whose lives are devoted thereto.

Attempts to copy Michigan's Progress—Sickness Statistics.

IN the *British Medical Journal*, London, August 8, 1896, is a short article by James Adam Dick, M.D., vice-president, Eastern Suburbs Medical Association, Sydney, New South Wales, relative to "An Experience in the Voluntary Notification of Diseases in Sydney, New South Wales." He says,—

"Having observed in the pages of the *British Medical Journal* since August 31, 1895, the accounts of the movement to establish a national system of registration of sickness in Great Britain, initiated by Dr. Arthur Newsholme, the medical officer of health of Brighton, it occurred to the writer that a brief note describing an effort made in the same direction at the antipodes, and by the Eastern Suburbs Medical Association of Sydney, New South Wales, might be of interest to those who are working at this most important subject. . . .

"The movement in Sydney had for its origin the example of the sickness statistics of that progressive body, the State Board of Health of Michigan, United States of America. Correspondence was entered into with the secretary at Lansing, Mich., who very kindly supplied several valuable pamphlets and books. The Eastern Suburbs Medical Association of Sydney resolved to initiate a scheme for the voluntary notification of those diseases causing sickness in the area comprised by the Association."

He then describes the procedure. Instead of having weekly reports, as in Michigan, the attempt was made to get monthly reports. This was unsuccessful, as might have been anticipated, because, while it is quite possible for a physician to remember to

make a report that must be made every week, as it is possible to remember on every Sunday to wind an eight-day clock, it will generally be found impossible to remember to make a report at a given time after a much longer interval, as, for instance, every month; therefore, unless a central office regularly notifies all the observers at the time the monthly report is due, there is a probability of a general failure to report. And, in Michigan, what was commenced and made successful for a time as a voluntary service by leading physicians, has since been supplemented by weekly reports required under the law to be made by local health officers, and in recent years more attention has been given to the securing of such official reports than to reports by volunteer physicians. The governmental is preferable to the voluntary system. Dr. Dick says,—

“In concluding this brief note, the writer hopes that this account of the first attempt in Australia to introduce a system of sickness registration may prove at least of interest in the history of this most important hygienic reform. And further, he hopes that our discouraging experiences in Sydney may not tend to abate one jot the enthusiasm with which Dr. Newsholme has taken up this subject. This important scheme is one that the British Medical Association should again take up earnestly in all its breadth, and urge its adoption upon Parliament.”

Tight Bands.

IT matters not whether it be the collar, the waist-band, or the garter, all constricting bands are injurious; anything that compresses the blood-vessels and interferes with the free circulation of the blood should not be tolerated.

Headache, chronic congestion of the brain, even apoplexy, will be favored and rendered more possible by the use of tight collars; while varicose veins are commonly caused by tight garters. Anything constricting the waist, is evidently and obviously injurious to the vital organs within, all of which require plenty of room that they may functionate properly. We think it barbarous for Chinese women to constrict their feet; Li Hung Chang thinks it much more barbarous for Americans to constrict their necks, waists, and legs; the old man is right; there are no vital organs in the feet,

Fatal Prosperity.

“POPULARITY HAS KILLED ME AT LAST.”

SO spoke the late George Du Maurier (the famous author of “Trilby”) on his death-bed, and so could it be truthfully said of the very great majority of prosperous men. While prosperity should prolong, it is, in truth, one of the greatest enemies of human life, and it is so because so few understand how to properly enjoy or utilize it.

To the majority of men popularity and prosperity, coming after years of struggle, bring with them one of the conditions, either or both fatal to health and longevity. Over-indulgence or inactivity are the two fatal handmaids of prosperity; abstinence and activity are the two torch-bearers of longevity.

The man who suddenly hears his name echoed throughout the world finds it a difficult matter (particularly if his nature be social) to decline the countless invitations that pour in upon him to ruin his stomach and his liver, while it requires a strong will to resist the inclination to inactivity natural upon the removal of the incentive to activity and fostered by the social life of indulgence.

It may be ungracious in the eyes of a thoughtless world for he whom it would honor to his death to refuse to be thus sacrificed, yet how foolish to thus hasten the end that can come but once.

Sturdy Legs.

MEDICAL director Albert L. Gihon is a retired medical officer of the United States navy, 64 years old, with sturdy legs, sturdy arms, sturdy organs, sturdy vitality, and a sturdy probability of living for thirty years to come. Before the recent meeting of the American Public Health Association, at Buffalo, Dr. Gihon read an essay on the bicycle, from which we are led to infer that this very eminent authority on matters pertaining to health does not hold this vehicle in very high esteem, asserting as he did his firm conviction that, as a means of locomotion, nothing can equal a pair of “sturdy legs.” Sturdy legs come only from exercise by walking, and sturdy legs from this cause necessarily imply a sturdy condition of the whole body.

Argue as we may, no form of exercise can equal walking,

and he who would enjoy the greatest measure of health and longevity will cultivate the practice of walking from two to five miles daily, rain or shine, and will persevere in this practice with religious pertinacity. It is a simple but most effective prescription for the preservation of health and attainment of longevity.

Dark Kitchens and Dirty Servants.

HOW many persons who shudder at, or are made sick by, a hair in the butter, or a worm in the lettuce or the spinach, ever stop to consider the cleanliness of the servants who prepare their food, or trouble themselves to provide a light and well-ventilated kitchen. All modern houses, even to the most humble, are now provided with bath-rooms, yet how few provide these facilities for the servants. The doctor knows how filthy are many of this class; how revoltingly dirty are their homes and their persons, and he involuntarily shudders as he sits at the hotel table and realizes how filthy and disease-laden may be, and most likely are, the hands that bring him his food.

Perhaps "ignorance is bliss," but we cannot but feel that cleanliness in this direction would be much more blissful.

The Value of Good Cooking.

IT is related of an eminent Parisian physician that, after leaving the bedsides of his wealthy patients, he would enter the kitchen, and caressing the chef, would say to him, "Ah! my dear friend, if it were not for you and your *confrères* what would we poor doctors do," thereby asserting his conviction that high living and bad cooking are two of the main causes of ill-health.

We have recently passed through an experience bearing upon this subject, so interesting and so practically instructive as to be eminently worthy of record.

During the warm weather of summer, wherever great numbers of persons congregate, we will always find a number of cases of digestive derangement, assuming the form of intestinal fermentation,—that is to say, the food is not properly digested, hence it putrefies or ferments, giving rise to poisons that, being absorbed, affect the whole system. While many causes may combine to

produce this condition, the quality of food and the degree of perfection of its preparation for consumption are most important ones.

Probably at no other place in the world do so many persons congregate during the summer months as at Atlantic City, and as a natural sequence there are many cases of intestinal fermentation. During this summer just passed the editor of this journal has been called upon to treat a number of cases in various parts of the city, *but not one case occurred in the Garden Hotel*, although it was full of guests during the whole season. It is a fact that the food is selected and prepared with the greatest care in this house, and the entire absence of digestive derangements (even among the help) could not but impress the direct relationship between quality of food and cooking and intestinal fermentation.

American versus European Sovereigns.

WHILE it made a very striking article and illustration, from the sensational stand-point, it was misleading and twisted, when the New York *World* recently pictured the crowned sovereigns of Europe as specimens of physical degeneracy and compared them with the American sovereign, as typified by a splendid specimen of health and physical development in the person of a workman in a Pittsburg puddling mill.

This is all very gratifying to American pride and patriotism, but it is not a fair comparison. The Pittsburg puddler is no more typical of the American than is the Welsh miner or the Liverpool "longshoreman" of the British sovereign, and physical health and strength is found in the one as well as in the other.

The workingman is the foundation-stone of all communities, and the workingman, as typical of activity and abstemiousness, is the one who enjoys health and vigor; it is not fair, therefore, and it is misleading, to compare the workingman of America with the kings and princes of Europe.

The real sovereigns of America, those who direct and control the course of events, are the millionaires, and if we compare the physical condition of the second and third generations of American millionaires with that of European royalty, we will not find much to boast about. Remember that it has required centuries of vice, indolence, and self-indulgence to reduce the sovereigns of

Europe to their present state of physical inferiority, while, with characteristic enterprise and energy, our American millionaires accomplish the same purpose in a few years, all of which tends to prove our doctrine that while we are pre-eminent in the arts of money-making and of dying, we have yet much to learn in the art of living.

Catching Cold.

NOW that the weather for "catching cold" is at hand, do not forget what we have so often preached that the person who "catches cold" is the one who does not provide for an adequate combustion within his body. The person who "catches cold" is the one who relies upon heat from without, from the stove or the furnace, to maintain the temperature of his body. The person who does not "catch cold" is the one who keeps a vigorous flame burning within, not by the use of stimulants, but by insuring to his body a plentiful supply of oxygen, which is the great supporter of combustion.

Progress in the Preventive Treatment in Cholera.

The May number of *Annales Pasteur* reports another forward stride in our knowledge of cholera and the methods of preventing it. Roux, Metchnikoff, and Taurelli announce that they have established the fact that cholera is an intoxication, and to combat it an antitoxin serum is required, and not an antimicrobial, as Pfeiffer asserts. This serum they have succeeded in producing for experimental purposes. Animals injected with it before they are inoculated with the comma bacilli resist the action of the latter in most cases, while animals inoculated without it almost all succumb. The same favorable results are obtained if the serum is administered simultaneously with the bacilli culture. But the results are negative if it is administered after the inoculation. The serum, therefore, is not curative, but it is preventive, which is, however, a great advance. The experimenters hope to secure better results when they have obtained a stronger serum.—*Annales de la Société de Médecine et Chirurgie de Liège*, June.



Slobbering.

Dr. Sanchez de Slivera (*Lo Sperimentale*) concludes that healthy infants never dribble. Infants that dribble only in the daytime, though apparently in good health, have their digestive functions impaired. Infants that dribble at night are suffering from obstruction of nasal respiration. These phenomena are altogether unconnected with dentition.

Advice to Bicyclists.

Dr. Rocheblave gives the following advice : 1. No one should ride until after an examination by a physician. This examination should be made both before and after a walk or run, for some cardiac lesions manifest themselves only after a state of fatigue. 2. Ride no faster than twelve kilometres an hour. 3. As far as possible guard against the desire to ride any faster. It is very difficult not to give way to the "delirium of swiftness." With a light machine on a good road an amateur may easily make twenty-five kilometres an hour. This is too much, for the pulse is increased to 150 even at fourteen and sixteen kilometres an hour.—*Pacific Medical Journal*.

Electrolized Salt-Water as an Antiseptic.

Dr. Julien Proger, chief surgeon of the Asylum for Deaf and Dumb Children at Asnieres, near Paris, and member of the Sanitary Council of the Department of the Seine, for four months has been using electrolized salt-water as an antiseptic, and has now laid the results of his experiments before the Académie de Médecine. This fluid is used in England as a disinfectant in the Royal Victoria Hospital at Netley, and as a deodorizer for the main sewers of Ipswich. The inventor, from the first, has claimed for it powerful and harmless antiseptic properties, and several years ago supplied Dr. Carlier, of Rouen, and Dr. Chantemesse, of Paris, with bottles of it for surgical and medical purposes. The opinion they

expressed was very favorable, and quantities of it have been supplied to persons suffering from wounds, sore throat, sore eyes, etc. In his communication to the Académie de Médecine he gives a technical report of his clinical experiments, and then sums them up by saying, "The electrolized saline water is neither caustic nor irritating; it may be applied to the mucous membrane as to the skin; it instantly removes all bad odors; stops all putrescent fermentation; kills microbes more effectually and rapidly than any other antiseptic; cleanses and heals fetid wounds and sores, and hastens healing; it is an ideal antiseptic." Dr. Proger further declares that he has used it with success in a case of incipient diphtheria.

Non-Poisonous White-Lead.

The *Fortschritte der Medicin* contains a note by Dr. M. Kirchner, of Hanover, on an article by K. B. Lehmann, which appeared in a recent number of the *Hygienische Rundschau*. It seems that a Glasgow white-lead company some time ago put lead sulphate on the market under the name of non-poisonous white-lead, and that the council of inquiry of the League of German Artists warmly recommended it. Lehmann, however, states that he had previously succeeded in killing a cat in thirty-six days by the daily administration of three grains of lead sulphate. Although it is insoluble in simple water, considerable lead is dissolved by the addition of dilute hydrochloric acid or a solution of common salt. Lehmann therefore gives warning against the use of this pigment, and remarks, in regard to the artists' council, "How hazardous it is for chemists who have made no special study of biology to pose as experts in special toxicologico-hygienic questions!"

Physicians should work less.

Dr. Kortright, in the *Brooklyn Medical Journal*, says that arterial sclerosis is a common cause of death in physicians. The lesson that we should learn from our deceased colleagues, he states, is not to work too long. When you find your arterial tension increasing, your temporal artery becoming tortuous, your radial growing hard, especially if you have a little palpitation and pass an increased amount of limpid urine, whatever your years, know that old age is upon you. Henceforth shape your life like one

that is old. Curb your ambition. Be content with a small practice. Reduce your expenses. Give up your night work. Decline confinements. Take a long vacation in summer. Retire early. Eat abstemiously. Drink not at all. Sell your horse. Take a great deal of moderate exercise in the open air. Watch the functions of the skin. Guard against a chill. Cultivate an even disposition. Study to be quiet.

Freaks of Vanity.

One of the prettiest girls in town is temporarily in retirement, owing to a misguided attempt to improve nature's handiwork. She has beautiful hair, but in color it is rather a dull brown and lacks utterly the burnished mahogany tint every really correct woman wears. She didn't want to bleach the hair. Peroxide is vulgar. She didn't want to touch it up with salts of tartar, for that ruins it. Somebody suggested dyeing it with henna. She tried it. At present she has the most beautiful hair imaginable, a dull, dark red, but, unfortunately, her scalp is as red as her hair, and as the color has so far defied all efforts to remove it she is not showing herself these days. She hopes the red will wear off in time, and hope is cheap.

There is really no limit to the things a woman will do when she sets out to beautify herself, and there never will be a limit till the most artistically beautiful woman ceases to be the most admired. Just now Washington women are following a fad which is not only foolish but dangerous as well. They are dyeing their eyelashes. No matter what the color your hair and eyebrows may be, it is the fad of the moment to shade your eyes with lashes of jet. They are supposed to lend clearness to the eyes and to increase their apparent size. Even in the hands of a competent "beauty doctress" the process is dangerous, and when the novice attempts to do it for herself the result is very often a series of painful visits to the oculist, as many a girl has discovered to her sorrow.—*Washington Post*.

Sanitary and Insanitary Plumbing.

The *Lancet* (London, England) has just published, July 4, 1896, the results of an elaborate piece of work conducted under its auspices, which will do much to disseminate among laymen as well as among the medical profession a knowledge of the sys-

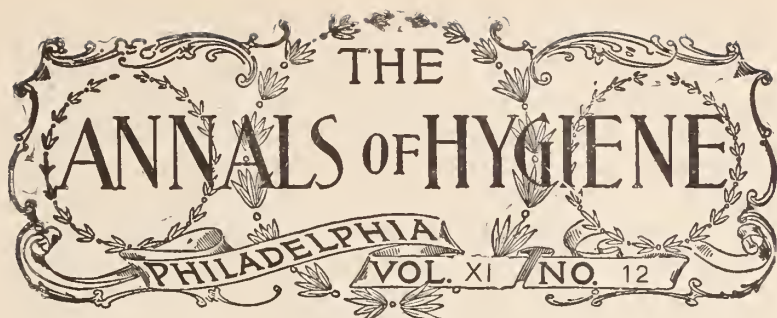
tem of pipes usually found in English dwellings for the inflow and distribution of water and its outflow contaminated with all the wastes of the household. Its enterprising management instituted a commission, which investigated the faulty and dangerous conditions that are most commonly found in city houses and suburban cottages. In its report the commission has grouped these conditions in a description of three houses, two four-story city dwellings, and one suburban villa, with a ground plan of each floor, illustrations of many of the defects and a special discussion in each instance not only of the defect, but of the remedial measures recommended. Although faults in plumbing were found to be exceedingly common in city houses, it is not to be supposed that all those represented in either of the two houses given in illustration were discovered in any one particular house. The insanitary conditions found in many houses are grouped under one roof merely for convenience of presentation and discussion. Three reasons are given for the existence of so many insanitary houses. First, the prevailing indifference and consequent ignorance of all classes as to the various sanitary appliances by which they are surrounded. This is being slowly corrected by the gradual education of the public through the greater interest taken in the subject by the medical profession; and this very report of the commission will be a powerful factor to this end, as it is not intended to confine its publication to the columns of the *Lancet*. It reaches the profession in this way, but it will hereafter be published in book form to permit it to reach householders, architects, contractors, and plumbers.

The second reason given for the insanitary conditions discovered is the bad work and cheap materials put into houses by unqualified or unscrupulous men encouraged by the dangerous practice of putting such work up for the competition of all who may choose to tender for it. In the anxiety of contractors to obtain work it is undertaken at prices which would yield no profit if efficiently executed; and when a work is entered upon under such conditions the natural tendency is to seek relief by scamping it in some form. It is positively stated that since the general adoption of the contract system houses are not, as a rule, substantially finished, and the work is not of a satisfactory character. The third reason given is the cost of rectifying insanitary work. Under this heading the profit and loss of the plumber is discussed at considerable length showing how a

modest profit cannot ordinarily be made legitimately on small contracts. Appended to each of the illustrative examples is a detailed estimate for the alterations recommended, that those who are interested in cost may have a standard of comparison.

Prior to the publication of this report it was submitted to the Worshipful Company of Plumbers, who appointed a committee to consider it. In transmitting the criticism of this committee the company desired that it be not held responsible for the work of its specially-appointed committee as the company in its corporate capacity does not take any part in what may be regarded as trade matters, but directs its attention solely to those connected with the training and registration of plumbers. This special committee considered the reasons given by the commission for the frequency of bad, defective, and insanitary work to be generally correct. It gave approval to the recommendations for new and altered work in the illustrative cases as being consistent with the requirements of modern sanitation and fairly representing the sound plumbing practice of the present day. Finally, it characterized the report as "a unique work on the subject of the efficiency and cost of plumbing work, calculated, if studied attentively, to assist members of the medical profession, sanitary authorities, and others in arriving at a more correct judgment than commonly prevails as to the chief causes of the defective and insanitary plumber's work frequently met with, and to afford them some useful information as to the cost of plumbing work which is sound in construction and sanitary in character."

The report of the *Lancet's* commission will be studied with as much interest on this side of the Atlantic as on the other, for many of the defects and faulty arrangements described may be found in our city houses; and the recommendations submitted are in accordance with the views held by our best sanitarians. It is to be observed that while the English soil-pipe is of lead and runs along the exterior of the wall of the house the American pipe is generally of iron and is retained inside the wall (on account of our severe winters) until it makes its exit as the house-drain. It is to be observed also that the English have an elaborate disconnecting chamber on the drain in place of our fresh air inlet on the house side of the trap. Our English contemporary is deserving of credit for this inquiry and report.—*Journal of the American Medical Association.*



COMMUNICATIONS.

Modern Street-Car Sanitation.¹

E. B. BORLAND, M.D.,
Pittsburg, Pa.

THAT the world is better, cleaner, and healthier than it was even a score of years ago is evident to any interested observer. That this progress is largely due to improved sanitation cannot be questioned. Improvements, however, have only been made along certain lines, while other sanitary matters of equal, if not greater, importance have been neglected.

In this city, choleraic diarrhœas have been reduced nearly one-half in the last five years, and this reduction may be directly attributed to smoother, cleaner streets and to purer food-supplies.

On the other hand, we still carry with us the municipal disgrace of a typhoid fever mortality more than four times greater than New York, Brooklyn, or even London. In Pittsburg, in 1894, 1197 cases with 152 deaths; in 1895, 1593 cases with 213 deaths. Is this progress?

Another of the disease-breeding and carrying centres which has received little or no attention is the modern street-car. No public conveyance is so frequently used by all classes. It ought to be a model of sanitary perfection, but, alas, it is not. It is probably the greatest single contagion-carrier in metropolitan life. Cars with seating capacity for only thirty persons, with less

¹ Read before the Sanitation Commission of Allegheny County, November 7, 1896.

than 200 square feet of floor-space, are frequently crowded, during busy hours, with from sixty to ninety or more passengers. With all the windows thrown open, it is impossible for every passenger to obtain sufficient fresh air in a *crowded winter car*. Where does the unfortunate mortal get sufficient oxygen to sustain life in a *crowded, closed winter car* during the average twenty-minute ride? The adult individual needs 1000 cubic feet of fresh air every twenty minutes to supply sufficient oxygen to his system and keep his respiratory organs in normal condition. Does he get 500? It is doubtful if he gets 100 in the average crowded car.

Then each passenger who occupies a seat has the extreme pleasure (?) of knowing that his standing neighbor is spraying his face with an invisible (frosty mornings excepted) mist, always laden with animal matter—and often with disease—twenty times a minute. Each passenger has the satisfaction (?) also of taking a bath in about two liquid quarts (vaporized) of poisonous skin excretions, thrown off by sixty persons in a twenty-minute ride. To cap the climax, each passenger (always a man) who is so inclined, either through ignorance, uncleanness, or viciousness, deposits his surplus saliva or expectoration on the floor, where it dries and is disseminated readily into the air by the movements of the car, and thus disease is carried to all susceptible individuals. Women do not spit on the floors, but they wear skirts long enough to wipe up sputum and carry it with them into their homes.

The five scourges of this city, according to reports of the Bureau of Health, are pneumonia, tuberculosis, diphtheria, scarlatina, and typhoid fever.

The first two in this list were the causes of nearly 1000 deaths in Pittsburg last year. The primary cause of a pneumonia is largely impure air which first vitiates the delicate lung tissue. Upon leaving the car the person is attacked by a chill. If he survives the attack, he may be left with a damaged lung, which is liable to become infected with *the* scourge of the human race, tuberculosis.

That scarlatina, diphtheria, and tuberculosis are markedly contagious and infectious cannot *now* be questioned.

Tuberculosis is the most important disease in the above list, because it causes 14 per cent. of all deaths, and this is the highest death-rate of any single disease. Its prevention gets little atten-

tion and “it goes marching on.” Less than 5 per cent. are born with it; more than 95 per cent. become infected after birth. Any weakling, either lean or fat,—no difference how robust his parents,—may suffer if he breathes a tuberculous atmosphere.

The most important source of infection is undoubtedly expectoration from ulcerating pulmonary lesions. The fresher the sputum, the more virulent the bacilli. In an ounce of it, millions of the special germ (tubercle bacilli) can usually be found with the microscope. These germs withstand freezing, and live for months when not exposed to sunshine and fresh air. Probably not less than eight persons in every thousand are daily expectorating tubercle bacilli. These germs can be promptly destroyed by boiling water (fifteen minutes), corrosive sublimate sixteen grains, and one drachm of tartaric acid dissolved in a pint of water, or a 10-per-cent. solution of carbolic acid. Either of these solutions can be used in well-glazed cuspidors.

It is now known by medical men that it is not necessary for any child to have an attack of even whooping-cough, measles, or mumps in order to make him grow. He grows faster, is healthier and happier, and lives longer without having any infectious disease, and, further, it is his *birthright* that he be protected to the fullest extent possible.

The crowding of and expectorating in street-cars have much to do with the spreading of all the above-mentioned infectious and contagious diseases, with the exception of typhoid fever, which is a water-borne disease.

PREVENTIVE MEASURES.

Open summer cars during summer only; the heating of winter cars by electricity, if possible, to economize oxygen; uniform ventilation; sufficient number of cars at all hours to seat each passenger; placing a cuspidor (partly filled with saw-dust, moistened with a 1 to 250 corrosive sublimate solution) in a wire rack, a few inches from the floor, in each end of cars; cuspidors to be cleaned each day when car is cleaned. Placards posted positively forbidding spitting on the floor, and the unceremonious ejection from the car of any passenger who refuses to obey. A similar rule is successfully enforced against smoking, why not against the more filthy and dangerous habit of spitting on the floor? A man always looks guilty (as he knows he is) when seen spitting on the floor.

What has been said about spitting on the floors of street-cars, and the care of the sputum, applies to railway cars and all public buildings with the exception of churches. Church-going people get along without expectorating on the floors of their places of worship, and this is evidence that *all* respectable people can avoid it in public buildings, conveyances, and on sidewalks.

"As a result of the growing popularity of the highlands of Southern New York and Northern Pennsylvania as resorts for consumptives, the town of Liberty, in Sullivan County, N. Y., has just passed an ordinance, according to the *New York Herald*, forbidding, under penalty, all persons from expectorating upon the sidewalks, door-yards, or floors of houses. The Health Board does not wish the little town to become a centre of infection."

Such an ordinance should be passed and enforced in cities as well as towns.

Four hundred years ago Galileo declared, "The world moves." It still moves and the sanitary world must move with it. Until the golden dawn there will always be a few persons who oppose every useful reform and wail over every rotten institution as it falls. On the other hand, there are thousands of intelligent, sensible, respectable citizens who are now ready to put their shoulders to the wheel of preventive medicine. It must roll on until every preventable disease is reduced to the lowest possible limit or eradicated, and this disease-cursed world is made, what its Creator intended, a modern Eden.

A Hot Bath will Bring Sleep.

Suppose a person to be tired out by overwork of any kind, to feel nervous, irritable, and worn, to be absolutely certain that bed means only tossing for hours in an unhappy wakefulness. We all know this condition of the body and mind. Turn on the hot water in the bath-room and soak in the hot bath until the drowsy feeling comes, which will be within three minutes; rub yourself briskly with a coarse Turkish towel until the body is perfectly dry, and then go to bed. You will sleep the sleep of the just, and rise in the morning wondering how you could have felt so badly the night before. The bath has saved many a one from a sleepless night, if not from a severe headache the next day.—DR. CYRUS EDSON, in June *Ladies' Home Journal*.

Children of Feeble Resistance: Their Care and Management.¹

BY JOHN MADISON TAYLOR, A.B., M.D.,
Professor of Diseases of Children, Philadelphia Polyclinic, etc.



A LARGE class of cases, sufficiently distinct to be described by themselves and to be very thoughtfully considered, are feeble children. The phenomena of disease and the remedies accepted as suitable, the refore, as usually outlined for the average child, with occasional and insufficient reference, usually most casual, to those of the weaker sort, who may or should be rare exceptions. For the first, the robust entities, knowledge has attained somewhat respectable proportions, and results may be safely and confidently predicted, and on the whole realized to the satisfaction of all immediately concerned. It is among the latter that surprises arise, producing confusion and occasional dismay, the results of which react, unfortunately, too often upon the physician.

It may be said, then, that an exceedingly useful item of equipment to the adviser or lover of children is a prompt and accurate appreciation of the marks of defective resistance, and it is a conspicuous evidence of wisdom to predicate how and when these may be so handled as to produce known results, be these good or bad.

Feeble children, as I use the term here, are those who are below the normal in their resistance to the numberless and unceasing hurtful agencies which must be met and overcome throughout the length of an ordinary span of life. Some children are beset accidentally with more perils and baneful conditions than others, but because they possess larger inherent vitality, vigor, reparative power or howsoever this quality of resistance may be described, pass through successfully what casts others out of the running, for shorter or longer periods of time.

This quality of feeble resistance, negative though it be, is a powerful factor, which requires the gravest consideration at all times, and is one of the fundamental points on which to base prognosis and modify treatment. It also requires special consideration and treatment for itself that the vital forces may, as indeed

¹ From the International Medical Magazine.

they can, be improved and strengthened by judicious measures. Thus is the individual improved and a second generation raised to a higher plane, or at least thus may we limit what had otherwise been an inevitable decadence.

The medical adviser often fails of his duty here, he being too content with the application of remedies to obvious disturbances,—certainly a more limited view than the trend of modern medicine can justify. He should assume the privilege—indeed the responsibility is mainly his—of doing much more than this. He may not, as society is now constructed, have it in his power to aid in the selection and mating of the parents. Attempts to go so far would be met with swift and dire reprimand, as some have found to our cost. The time may come when his advice shall be sought even here, to the profound betterment of the race. This will be a probable outcome of our growing knowledge of inheritance and predisposition.

The study of degeneracy may yet be fruitful of good results, even though it flare out in the bombastic ravings of certain noisy fellows exploding here and there in popular books adjusted to the morbid cravings of the current journalistic demands.

A general interest in and popular knowledge of the marks and dangers of the degenerate individuals is a hopeful ground, out of which may grow, conscious or unconscious, selection among human beings.

Among animals instinctive selection is the rule. It is left for human beings to be influenced far more by whimsical, or social, or pecuniary considerations, whereby the race is kept at a lower level through propagation from inferior specimens, or at any rate not the best ones.

We may at least hope for reformation on these lines as knowledge of the causes and results of injudicious marriages becomes fashionable.

But it is the part of wisdom to bear in mind that the attempts of individuals to thus exert influence is both doubtful and perilous (to the reformer). Meanwhile, we must study the material under our hands and continue to hope for co-operative effort by slow degrees.

We Americans have drawn heavily on our heritage of intrinsic vigor had from our European ancestors and supplemented by the vitalizing life of pioneer days, and are now accused of being on the verge of a decadence. This may not be altogether true, and

statistics do not support that view. Certainly the average staying power of the native-born population is among the best. Unfortunately, the steady additions now made to our ranks are no longer chiefly the sturdy seekers for "open room and verge enough" wherein to swing the axe or drive the plough, but are in great measure degenerate and criminal offscourings from European nations, who are wise enough to rid themselves of such rubbish.

This intermingling infects our wholesome stock with various hurtful racial, neurotic, and nutritional peculiarities, tendencies, and diseases. The influence of all this must be ceaselessly watched and guarded against wherever possible. Mixed races are proverbially feebler than peoples of pure stock, conspicuous in the adulteration of the white with various colored races, and this is also seen in the American wherever several nationalities fuse.

City life is of itself unwholesome and devitalizing to those who remain under the conditions of overcrowding, inevitable in large centres of population. And all this, too, quite independently of the more obvious or tangible hurtfulness of inferior hygiene, poor food, defective light and air. The unconscious agitation of the molecules induced by ceaseless hurry, swift movements of objects all about, noises, sights and sounds, the jarring of the very houses from perpetually passing ponderous vans and street-cars, and endless other elements of unrest, wears and wearies and exhausts.

Not long since a patient of mine, a child with typhoid fever, became quite delirious, almost comatose, and the "strike" of the trolley men came on. The temperature thereupon went steadily down almost to normal, though acute consciousness did not return. Suddenly the "strike was on," and the thundering, clanging cars began their racket, and at once the temperature rose to 104° F., giving us great alarm, though the child seemed not to recognize the noise at all.

Notwithstanding the many menaces in the outlook for our American people, we are demonstrated to be, on the whole, steadily improving as a race. The filthy gutter-stream poured into our clean waters not only is amply diluted, but some blessed inherent qualities of our soil induce steady subsidence.

Moreover, the inevitable exhaustion which was showing in us, the outcome of our earliest years of intense struggle in all ways and producing a sad crop of neurasthenics of all grades and types,

is being again overcome by improved modes of living and conserving of energies. One of the most effectual of these is our better appreciation of *leisure*, a word only recently introduced into American "vocabulary." Regular and frequent outings become more generally recognized as imperative among our "hustlers," the working years of the bread-winners are notably increased, and above all the second generation shows more evidence of surviving.

But it is vain to expect a restoration to the plane of initial vigor which our English cousins enjoy (who can still boast a higher per cent. of staying power than we), short of several generations, pursuing proper modes of work and play suitably combined. It should be our aim, however, to acquire in our own persons and for our children that invaluable possession, a predisposition to be and remain strong, through which we may triumph over endless depressing influences.

Individual susceptibility shown to poisons, medicines, irritants, and foods warrants a passing remark.

Among the conspicuous illustrations of feebleness is the curious and unaccountable disturbances set up by relatively innocent things in children of low vitality. To be sure, in the history, very many times there is a grain of wheat in the whole measure of chaff, and many of the peculiarities claimed by fond mothers are partly imagined and partly an hysterical overgrowth. Nevertheless, there are many clearly-marked idiosyncrasies which must be duly considered whenever a prescription is written or a regimen outlined. Children bear some drugs in doses which as adults they could not endure. The use of these should then be in ampler doses to secure a desired effect.

The susceptibility to digestive or other disturbances caused by ordinary foods is, however, of more importance in this research.

A family of eight children among whom I have grown up cannot take cow's milk without suffering a sharp gastritis. A baby of one of these was most difficult to feed during an attack of mastitis in the mother, and even the selection of a wet-nurse was a grave problem. In other respects it was entirely vigorous and thrived famously upon the mother's recovery. In another lad the mere tasting of hen's eggs, and it may be of other varieties, sets up a violent poisoning (stomatitis) in a few minutes, no matter how small the amount or perfectly concealed. Acute

œdema of the mucous membranes is produced and urticaria so severe, and of the glottis twice, that the dyspnœa imperilled life. Susceptibilities to the action of sweets, certain berries, as the strawberry and raspberry, the presence of some flowers, are matters of common knowledge. The effect of heat, especially that of the sun, is dangerous to many, naturally in infants, and deserves more than merely a passing allusion. Sea-air, or rather the atmosphere at the very edge of the sea, which may involve several factors, is disastrous to some little folk. I am of the opinion that much of this is dependent upon perpetual small concussions, either conveyed through the air, especially through sense organs, or the rhythmical beat of the surf, transferred like bone conduction along the shore to the sufferer. One family of my acquaintance have tried again and again to overcome this apparent frailty, but are forced inland (a single mile will do), or else they become exhausted. In other cases altitude is hurtful, and quite independent of such local weaknesses as catarrhal states, emphysema, or dilated hearts. The dampness of some localities causes great distress to some, while for others a marked dryness is equally disturbing. Goethe relates how he was made ill by a deadly odor which assailed him whenever he visited Schiller, until he found that the latter poet felt a craving or need for the presence of apples, and these he kept in various stages of decomposition in a bureau-drawer of his study. Many persons are known to faint without knowing why if a mouse be in a room, or to feel similarly affected by some other animals.

The marks of feebleness are manifold; far too numerous and varied to discuss at length, and obvious usually to a watchful person, medical or lay. No one nor one dozen symptoms are competent to designate so variable a state, and no enumeration of points of organic depreciation would make the matter clear, unless described with large attention to side-lights and modifications or upon the case in clinic fashion. Experience with or the accurate histories of patients is needed to form the judgment. A loss of interest in surrounding objects may mean physical or mental defect, but not indeed unless many other points are estimated. An excitable idiot takes a vivid interest in everything in sight only; this is obviously the reverse of intelligence, and is seldom sustained. Scant endurance or limited staying power is a notable mark of frailty, though this gives little knowledge of relative susceptibility to disease.

Again, an important study is the critical period in development and how they vary in different individuals,—a large research in itself. It is a common experience to note a sudden stop in wholesome progress, mental or physical, or sudden leaps and bounds in the right direction, or surprises as to one side,—oblique progress not always to be welcomed and only moderately controllable. Precocity is at one end of this line, premature senility at the other. Sudden advances are occasionally made which astonish observers as well as delight parents, the result being, perhaps, in the end admirable. The curiosities of stature growth are now and again startling and disconcerting, especially when the tall child suddenly stops in the midst of right increments, and, on the other hand, when one in whose size great satisfaction is felt, suddenly shoots up to the proportions of a light-house. Here there may be no possibility of control, but I decline to believe it. There must be means to control some of these extreme variations, and we shall yet find and apply them. The interesting point here is the relativity of the vital organs. The suddenly tall person probably has no proportionate growth of heart and lungs and therein is frail. The short folk are again often seen to be obviously built for great size, and consequently possess, presumably, bigger and more forceful organs. Indeed, the strongest men are short, and tall men are rarely long lived or very enduring.

Great progress has been made in conserving the gross vitality of the race. In this, the expectation of life, the average length has advanced markedly in recent years. If this was due to real progress in conserving vital forces all along the lines of life (age, condition, race, etc.), we could rejoice greatly and congratulate ourselves on a definite gain over past ages. Unfortunately this is not proven,—despite our vaunted medical progress, faithfully and conscientiously studied as it is,—but Dr. John S. Billings (in his lecture on “Vital Statistics,” 1889) concludes that this increase in the expectation of life is only true of the earlier ages, and because more persons of feeble constitution are now nursed to manhood. The decrease in mortality is due chiefly to the better care of infants and the prevention of contagious diseases.

CARE AND MANAGEMENT.

Treatment.—The upbuilding and repair of weakly children should be considered on broad principles, the basis of which is

elaborate thoroughness and abundance of time. It involves special attention to dietetics, including a critical estimation of varying states and capacities of digestion, all the ordinary hygienic measures and the hopeful use of some drugs. There must be insisted on for such, during both average health and during illness and convalescence, more rest for the mind and body than is necessary for the average child. All outings and exercises, both active and passive, should be supplemented by rest, lying down for as long a time, it may be minute for minute, as the active periods. This rest is necessary to enable lowered organic processes to regain their customary tone, and especially to secure definite gains. It will often be necessary to precede food by a period of rest, to enable the digestive activities to do their work; otherwise, the highly sensitive nervous distribution to the digestive apparatus will fail of its full energizing. Agitation impairs the even flow of the circulation so necessary for weakened organs, particularly the brain, whence governing impulses perpetually flow, dominating the body and spirit. Therefore, too, the emotions must in the weakly be not only kept well under control, but subjected to the least possible disturbance or exaltation. The temperaments (or mental attitudes from which they view life) of all children require steady and patient training. Even in the home a clear recognition of these is needed. In the case of strong children equipped with clear, dominant, healthy minds it is undoubtedly true that fair results come somehow from very diverse and ill-directed influences; but for the weaker ones impressionable or apathetic, thorough conscientious study and specially directed measures are required.

For such little folk it is not enough to prescribe suitable medicines and enumerate casually a lot of easily-digested foods which the mother shall provide, nor to direct proper bathings, outings, and other general measures. A thorough systematization of the entire daily life of the child is infinitely more efficacious than the most accurately-selected medicines or the use of that innumerable host of children's foods which, in the form of specious descriptive circulars, the enterprising chemists flood our morning mails. The best tonic for the stomach is food carefully prepared, such as a fairly intelligent mother in even the humblest walks of life, if rightly directed, can readily afford, but always provided that the times and circumstances of the administration be wisely chosen and rigidly adhered to.

Predigestion of food-stuffs offers undeniable safeguards to the weakened, toneless digestive tract, but robs the pabulum too often of that savoriness which is essential to acceptability, and hence imperils appetite.

While exercising care as to the quality and preparation of foods for weakly or convalescent children, it is imperative to bear in mind the need for suitable variety. This fact I have time and again verified. A child will be presented who is fed with the utmost care and regularity, oftentimes under the best of medical advice, and yet its progress comes to a standstill, or it is seen to obviously lose. Upon inquiry there will be revealed much sameness in the diet list, otherwise properly adjusted to the condition for which it was originally outlined. The little victim's soul comes to loathe and abhor the sight of flabby paps, occurring in dismal routine, or the same old, wearing round of bread, meat, and a dab of vegetables. If to these are now added a more varied dietary, revising the menu day by day, even lapsing into a taste, now and again, of articles ordinarily denied yet savory and tempting, great progress will soon be obvious.

The growing practice of sterilizing milk for infants and children, invaluable as this protection is for temporary use during hot weather in cities, often leaves anæmia and tonelessness in its train if its use be persisted in. There is a value in the vital properties of fresh milk not to be produced or retained by any artificial process.

The utmost care needs to be observed, however, first, in the quality of the milk, which includes an estimation of the health of the cows; secondly, strict regulation as to the treatment of the milk while being gathered and immediately thereafter, and, finally, the greatest conscientiousness in securing cleanliness of the containing vessels. These conditions, though difficult, are becoming more and more possible as knowledge grows, and if fulfilled will bring a perfect article to the consumer.

The points which certainly do not obtain adequate general attention are the thorough systematization of the when, where, and how much of these foods shall be taken; what *varieties* shall be insisted upon; the times, kind, and suitability of bath, the amount and character of exercise, and, above all, definite periods of *rest* before and after feeding, so that the organs shall be able to act deliberately. First, then, when confronted with an ailing child, one who is not ill, but far from well; when appetite is variable

but small, when sleep is restless, the digestive organs manifestly disturbed and temper fretful, one that fails to hold its own in play among its fellows, and, what may not be ignored, whose weekly school report shows decided backsliding ; first, I say, look the little fellow over thoroughly and in all respects.

There may not be one organ more amiss than another, though the most obvious faults will usually be seen in that avenue to all vital power, the *prima via*. There may be yet no falling off in weight, a far more instructive index in a child than in an adult, nor an obvious anæmia. There may be a quicker pulse than ordinarily, a change in the heart-sounds which the initiated will recognize but cannot so clearly describe ; there probably will be found, if so much trouble be taken, a rise in temperature, slight but unmistakable at times, at others sub-normality well marked, and there is great probability that neither the attention nor other exertion is readily sustained. The child, in marked contrast to its healthy comrades and itself at other times, is willing to sit aimlessly, if not a martyr to energetic taskmasters, or to an over-strenuous conscience which drives its willing victim to the verge of perpetual exhaustion, and often over it into the pit of complete collapse.

Such cases as here pictured are common enough, if only the eyes are open to see them. They escape attention only too readily till some malady seizes them in all their pitiable weakness, and life is speedily quenched. It is a worthy quest, then, to seek out and rescue these from, it may be no picturesque fate, but an ever-present menace ; to rehabilitate these unresilient little bodies, and even make them better than before ; to put them in the way of a sound bodily equipment for their life-work anon.

Here is a little sketch of a sort of modified rest treatment which produces excellent results when all other efforts have failed to start a child along the line of progress. Put the little one in bed and keep him there from a few days to a week or more, and write down distinctly for the mother a strict schedule giving the exact hours for feeding. These may be the ordinary three meals with some little fluid food taken in between whiles, or better, direct four meals to be given in the day, at, say, seven, twelve, four, and eight o'clock, the largest meal at noon. Omit the tonics hitherto given and add digestive ferments, or malt, or both. Let the day begin with a sponge-bath in a warm room, then a light breakfast daintily served. In the early afternoon let

some one rub into the trunk and limbs an oil ; olive oil is very nice and much of it is thus absorbed ; cod-liver oil is better, and not disagreeable if free from rancidity and one-third part soap liniment is added, which probably aids the osmotic action. This serves as a form of passive exercise and also a nutriment, or at least a tonic to the skin, circulation, and surface nerves. The surface should be thoroughly wiped off afterwards, that no foulness remain. I have seen children immensely benefited, even among the poorest dispensary cases, from this one measure alone. Above all, in the early course of these measures, if the child manifest a desire for toys they may be allowed sparingly, but aggressive entertainment by over-officious persons is a harm and an offence and should be strictly forbidden. After a few days or a week the range of one sunny room may be permitted, but still the child should be let alone, and in most cases it will be happy and amuse itself.

Frail children require systematic development of their various organs, as well as of their muscles. To be sure, it seems scarcely practicable to develop some organs, as a stomach or a kidney ; nevertheless, it is possible to do so. It is abundantly obvious that the eye and the skin can be developed, and it is equally important that all these organs should receive attention in the aggregate and separately, especially where there is a manifest under-development of the one or the other, which then should receive specific attention.

To take first the eye,—an infant can sustain very considerable damage to its eye by objectionable exposure to light, which may be too strong, or too sudden, or too constant. It may readily have its eye-muscles disturbed by an habitual attitude, as when, by reason of a weak back or other disability, it is confined to a single place, as a chair, in a customary situation in the same room, straining vision in one way, and many other objectionable practices which common sense and observation will make evident. By the same token, this eye or pair of eyes may become developed, not only in its organic capacities, in the judging of distance, inviting refractive adjustments, etc. ; but, as intelligence increases, great good can be accomplished by a thoughtful use of interesting objects which may excite the child's wholesome interest and educate its perception.

There are experiments now afoot, that at least promise well, by which children can be taught so to perceive differences of color,

in form, and the arrangement of objects, as will greatly facilitate their comprehension of natural phenomena. It is quite possible that along this line may be found means to prevent defects of sight, such as color-blindness, as well as to check the progress of myopia and other refractive errors.

One practical point suggests itself here, and that is the great unwisdom of submitting babies to rapid journeys, the looking out of windows at swiftly-passing objects while flying along. We have seen migraine apparently develop through the custom of giving a couple of small children long exercise in a carriage with a pair of fast horses every day. We have certainly seen instances of profound disturbance caused by this means, and it is reasonable to infer that a continuance of such like objectionable measures may produce lasting damage upon so delicate an organ as the eye, and the whole sensitive organism thus is imperilled.

The custom of encouraging a child to sleep while being driven about is unwise. The motion is both regular and subject to sudden irregularities. The persistence of one kind of motion up and down is bad, not only producing relatively unsound sleep, but keeping up a molecular agitation throughout, which has little to recommend it. If the infant be awake and sufficiently old and alert to sit up and look about, or to be forcibly held by the nurse in an upright position, a strain is put upon the spinal column. Thus continuous mild concussions are administered to the spinal cord and brain; thus the eye is put upon the strain, reacting directly upon the brain; an element of excitement is introduced and physiological irritability is a probable result.

The development of the skin is of paramount importance in the young, as upon its capacity to endure changes in temperature and other states will depend much of the future healthfulness of the individual. Some children have the layers of the skin unformed from the first, and it never acquires normal activity. There is quite a large variety of skins obviously different to the observant persons,—the firm, glossy, or velvety skin of health; the pallid, flabby, or leaky skin, readily becoming over-moist, loosely attached and wrinkling readily; or the yellow, harsh skin, either flabby and toneless, or stiff and inelastic, adhering to the bone, or seeming to do so. Some skins are insensitive and react to almost no stimulant; others chafe and get out of order if only thin clothing press upon them, hypersensitive to all agencies.

The skin of a red-haired child is always tender and usually beautiful. Children predisposed to tuberculosis or scrofulosis have poor skins, which can be and should be immediately improved. Various neuroses show in the skin. In short, the surface of the body is of vast activity, and the cultivation of this large part of the organism is of critical importance.

Now, as to the means of improvement in our control. I believe if babies were anointed with oil from the first, and cleansed by rubbing them off, not using water, or but sparingly, for weeks or months, their skins would become more vigorous than when soap and water are freely used. This I have proved by a series of cases observed (and published), three of whom were my own offspring. Exposure of the skins of infants to the air of an equally heated room is wholesome, and they are better for as much exposure as possible, always short of chills. In America we are subject to such sudden and extreme changes that we dare not allow this as freely as is safe in many other countries. The exposure of knees and shoulders in children not the most robust is dangerous unless carefully watched and promptly covered at the approach of chilling conditions. In-doors it is of use, out-doors not to be recommended at all. To go barefoot is wholesome for many. Almost never do children hurt their feet, and thus only are the feet symmetrically developed. They do not increase in size seriously. I know of numbers of Southern girls with feet entirely beautiful who ran barefoot in warm weather until they were almost grown.

Cautious exposures can induce a tolerance of skin and feet exposure which will greatly strengthen the whole organism and should be encouraged. The clothing at no time should be one bit more than necessary to protect. Over-swathing lessens energy to a most surprising extent; it throws the volatile elements of excretion back into the blood and directly poisons. The skin should be able to throw entirely and promptly away its effluvia, which should be suffered free escape or it will damage the lungs or kidneys. When we bear in mind the capacity of the surface blood-vessels, and how greatly the vascular dilatation or contraction alters the state of the varying blood-supply to internal organs, also how large is the amount of matter excreted by the skin, and many other points involved in its functional activities, we at once recognize the importance of preserving its integrity at all times. If these activities are anatomically undeveloped or

functionally impaired, they demand our best attention. Natural means are best, judiciously controlled. Exposure is important, always with caution. Bathing should be frequent, daily, indeed, or in hot weather, oftener, in as cool water as can be enjoyed or well endured, but gradually if unaccustomed. Bathing should be followed by thorough drying and rubbing, and prompt covering; weakly folk should lie down a while after. If chilled, let them get into bed for a time till complete reaction comes or fatigue goes. When bathing cannot be so well endured, at least so often as may be indicated, then a dry rub will suffice, especially after exertion and opening of the pores. If all this tires the child, it should lie down, and the work be done by another person. Soaps are to be used sparingly and only for cleansing. Salt is almost as cleansing and more stimulating. If the skin is tender, bran decoctions added to the bath will soothe. Ammonia or sulphur added to the water has value, rendering it soft and exerting special effects. To begin cold bathing, let one unaccustomed stand in three inches of warm water and be sponged off in cool and cooler water. The custom of the Greeks to exercise naked anointed with oils has much to commend it. The rolling in the sand of the arena in wrestling was accredited with benefit, and no doubt rightly. Wading at the sea-shore and digging in the sand is analogous, and much to be commended if not too prolonged. Swimming comes next to bathing, and is among the finest agencies for invigoration of skin and muscles. Remaining long in the water, above half an hour, is of doubtful value, and over an hour is a strain, and for several hours is hurtful to any but the strongest, and does them no good. Water colder than the air of the bath-room is often hurtful for the strongest and of little or no value to any. Shower-baths and needle-baths are terrifying to most children, and possess no advantage over sponging or plunging. It is best for little folk to encourage cool bathing by gentle graduations and to make of it a reward or frolic.

The exercise of the lungs next to the skin requires much attention. First, it is necessary to make sure that the avenues to the lungs, the nose, and throat shall be clean and healthy. Upon proper lung action depends the aëration of the blood, and through these the complete activity of the remotest organ. Upon the integrity of the epithelium of the respiratory passages depends in great measure the defence of the organism against the onslaughts of many microbic poisons.

The nose and naso-pharynx must be kept free of irritations and pathologic changes, which may limit function or obstruct the in-and-out go of the air. Upon the competence of the lung-expansion will depend the completeness of oxygenation and the integrity of especially those portions of the lung which are less liable to a full distention, as the apices, so rarely developed and so vulnerable, and also the lower borders. The development of the lungs, of course, is more commonly obtained through normal activities, but if for any reason these are impaired, as, for instance, lameness, an enfeebled or damaged heart, or a weak, nervous organization, and the child be not able, or it may be unwilling, or, at least, indisposed to wholesome action and exercises, then it is essential not to lose sight of the necessity of getting these lungs sufficiently dilated for their proper growth and the continuance of their integrity. For feeble children it is convenient to induce them to play at certain games which may involve deep respirations and forcible blowings. Indeed, one of the first accomplishments to teach a child is to blow its nose properly. Pretty much every child in America inherits or may develop a condition of pharyngeal catarrh. To be sure, among the Greeks, it was considered a degradation to be obliged to blow the nose, and a most impolite thing to do, but the reason for that was their perfect health, and a large part of this was the magnificent attention their skins received throughout their earlier and later years.

Our children will almost inevitably acquire occasional catarrhs, and they should be early taught to free the nose of this secretion. The way to do this is to teach them to blow a long, steady blast, holding the handkerchief against one nostril the while, and then holding the opposite nostril, to take a long inspiration, and then to blow steadily out of the other one. And then, if not free, to repeat this process on alternate sides, at least twice. Then the air comes and goes freely, as it should, to the lungs, suitably warmed and screened. Hearing also needs attention in the same way. As is well known, those children who habitually hear good music have this sense-perception well developed. The sense of smell, while deserving of attention, is rather more likely to be over-developed to the point of squeamishness than to suffer any lack in this direction, seeing that in the evolution of the race the nose has clearly less need of development than in the savage state. In the matter of taste this merely need be alluded to, but might be discussed to a very interesting length.

Hygiene of the Physician Himself.¹

BY H. B. TANNER, M.D.,

Kaukauna, Wis.



HYGIENE of the physician should be such a personal application of the rules of life and conduct as shall enable him to do the greatest good to the greatest number.

The highest mission of the physicar is hygienic rather than restorative. To aid in removing every obstacle to the mental and physical development of the human family is the goal sought for.

It has come to be recognized as a fundamental law in sociology that a man's first duty is to the State, his second to his family, and his last to himself. Because a man is a physician, he is not thereby absolved from his duty as a citizen any more than are those in other callings. The hygiene of the physician himself is best promoted when he is a partisan in public affairs. Of course it is not to be supposed that every doctor should turn active politician, but it should be expected that every true physician will keep himself well-informed on all matters subject to legislation by his representatives, and that he will let his opinions be heard and felt when occasion demands.

To attain the high position in social and public life that his education entitles him to as a member of one of the learned professions, that of medicine, the most liberal of them all, the physician must needs give heed to his habits. The hygiene of the physician as applied to his habits requires careful attention.

The masses look to the physician as authority on medical knowledge. He who professes to try to prolong human life and ameliorate the sufferings of humanity, should be well qualified to advise in regard to all rules of health, and to give this advice proper weight, his personal habits must be such as will lend the weight of authority to any opinion he may give. If the public see that he governs his daily life by those never-erring laws of nature, they will be more ready to follow where he leads.

The public conduct of the physician should be distinguished

¹ Practical Medicine.

by sobriety and industry, for the personality of the physician, his disposition and habits, form a large part of his success or failure. Habits of intemperance are so easily formed by the wearied physician that a word of caution is expedient. At times, through overwork, an injurious strain upon the physical and mental forces is unavoidable. The physician becomes sleepless, loses appetite, fails in strength, and shows other signs of exhaustion. A stimulant or a narcotic may temporarily whip up the exhausted energies, but at the expense of more serious disaster later. The real remedies are rest and nutrition. Physicians should live well and avoid exhaustion by making a special study of foods and their effects upon themselves when suffering from extreme weariness. The vexed question of tobacco has a bearing upon this point. If the narcotic it contains is promptly eliminated by the system and the indulgence leaves no unpleasant taste in the mouth, an occasional cigar or semi-occasional pipe may prove of benefit.

IN no other walk of life is it so absolutely necessary to practise personal cleanliness. In the practice of medicine personal cleanliness may well go first and godliness second. We have only to point to the elaborate directions in the Mosaic laws for the preservation of health through scrupulous attention to cleanliness, for our authority in stating that physicians should personally observe the laws of hygiene in regard to cleanliness in all of its details.

These habits of cleanliness should extend to the clothes we wear as well as to the care of the hair and beard. It is perhaps unnecessary in this connection to carry out the dictum of a Boston surgeon, who says no physician should wear a beard, for if the beard is a favorite nesting place for microbes so is the hair of the head likewise, and to sacrifice this would be a hardship indeed to some of the members of the profession, of the gentler sex. But if a physician must wear long hair and a long beard, a decent regard for the teachings of hygiene requires that it be kept clean and in order. The care of the mouth and teeth is very essential. A more frequent visit, as a patient, to a practitioner of the sister profession of dentistry will do us all good. A pure breath and clean teeth free from cavities, serve to make life more agreeable to ourselves and pleasant to our patients. But above all, constant attention to cleanliness of the hands, will repay the best, for the hands are the most frequent source of conveying septic material.

The physician in active practice, with a number of patients

with infectious diseases to visit every day, cannot change his attire after every visit, and indeed I do not believe it is necessary. If on visiting cases of diphtheria, scarlet fever, etc., the outside coat is buttoned up to the throat on entering the house, a brisk walk or ride in the open air before visiting the next patient will serve to dislodge or destroy any disease-germs that may have found a lodgement there. But with the hands a little more care is necessary. Before leaving the house the hands should be thoroughly scrubbed in hot water, with green soap, and after a careful rinsing to remove the suds, washed in a weak solution of bichlorid. Of course a more thorough preparation of the hands is necessary in surgical cases.

While it is proper upon all occasions to display a reasonable zeal in exemplifying the teachings of hygiene personally, I think it is altogether unnecessary for the hygienic physician to anoint his lips with carbolized rose-water before kissing his wife or sister, as suggested by a Chicago physician recently.

Nor do I think it would be a sufficient excuse to one's conscience to refuse to take communion at church because some enterprising dealer had not as yet succeeded in selling the trustees a set of individual communion cups. Nor would the physician, when called as a witness and ordered by the judge to kiss the Holy Bible, be justified in calling for a pad of iodoform gauze, to cover the Holy Bible, before complying.

These things are mentioned only to exhibit the vagaries of some of the teachers of hygiene. Since the science of bacteriology has demonstrated the omnipresence of microbes, and the direful results when they find a lodgement in the human system, it is not strange that occasionally a physician is found who is a "rabid antisepticist," and whose nervous dread of infection leads him to promulgate extreme measures to the detriment of his peace of mind.

If the physician would retain good mental health and intellectual vigor, sufficient for the discharge of these various duties in the best possible manner, he should avoid overwork and anxiety. It is the feeling of personal involvement and perpetual anxiety, as much as overwork, that breaks down the health and shortens the life of the physician. To this end he should cultivate a cheerful disposition, and so far as he is able free himself from anxiety as to results. To this end he should systematize his work, and so far as possible perform every duty at its proper hour.

Office hours should be regularly kept, hours for meals, for sleep, and for recreation should be as scrupulously observed. If a call comes which destroys the rest for a single night, the lost sleep should be made up as fully as the circumstances of the case will permit. Every physician should secure an annual vacation and relinquish toil altogether, even if it is only for a single day, for it is apparent that regular holiday seasons must be a great hygienic benefit to every hard-worked physician, and especially to the harassed medical man of the city, to whom indeed it is a physiological necessity

The human mind is not a machine that can be worked in one groove all the time. Its best and most satisfactory is in a change. It is worry and not work which wears out, and to have some congenial occupation into which to divert the mind when it is liable or likely to be over-burdened with work, is the best safeguard the brain-worker can have. That medical man is always safest who has a hobby. Every physician should have a pursuit or study, wholly outside of medicine, to serve as a diversion and means of recreation. To name all of the various means of thus diverting the mind of the physician from his work would be impossible, for in choosing such a pursuit we have a wide range of topics to select from, astronomy, drawing, out-door sketching, photography, comparative anatomy, meteorology, hygiene, modern languages, hunting and fishing, etc. If we would retain good mental health, we must not lose faith in the future of our noble profession. The great advance in every department of medical science during the past twenty years leads us to anticipate most encouraging developments in the near future. We are on the threshold of a new era. Nature is yielding her secrets to patient inquiry. Mystery is becoming certain knowledge and assured truth. The future of medicine is inspiring. And if we would partake of the glory of this coming age we must pay close attention to the hygiene of the physician himself.

A Test for Humidity in Rooms.

It is not easy to determine the relative dampness of a room by inspection. A surer method is to expose a known weight—say 1000 grains—of dry, fresh lime in a shallow dish, and close up the room perfectly tight for twenty-four hours. If at the end of that time the lime has absorbed over 1 per cent. of moisture, the room should be considered sufficiently damp to be unhealthy.

The Growth of Boys.¹

BY SCHUYLER B. MOON,

McDonogh, Md.

IT will be necessary first to give a brief account of the material which forms the basis of the comparison to be made between the boy and the man, and to explain the method by which they are to be compared. During the past eight years each boy of the McDonogh School, situated near Baltimore, Md., has been measured once annually. From these measurements a percentile table for each year of age from 11 to 15 has been compiled, the measurements of from 100 to 150 boys being employed in compiling each table. The 50-per-cent. columns of these tables are taken to represent the typical boys of the years of age from 11 to 15 respectively. The 50-per-cent. column of Dr. Seaver's percentile table, compiled from the measurements of Yale University students, has been taken to represent the typical man. In order to compare the typical boys of the different ages with this typical man, their heights have been made equal to his, and their other dimensions increased in the same ratio. The resulting numbers, when plotted on Dr. Seaver's table, furnish a diagram by means of which we may quickly ascertain in what respects the boy is, relatively to height, inferior to the man, his equal, or his superior. To be more explicit, let me refer you to Chart I. The dotted line on this chart represents the typical boy of the age 11. His height is 1349 millimetres, while that of the typical man is 1724 millimetres. Dividing 1724 by 1349 we obtain the factor 1.278, and multiplying each measurement of the typical boy by this factor, a set of numbers is obtained, which, when plotted upon Dr. Seaver's table, gives the dotted line as in Chart I. Weight must, of course, be multiplied by the cube of this factor. Since the results for the right side of the body are similar to those for the left, it is unnecessary to give both. For such cases the diagrams on these charts represent the mean between the right and the left, this being perhaps more nearly correct than either alone. On account of the small number of boys measured, and

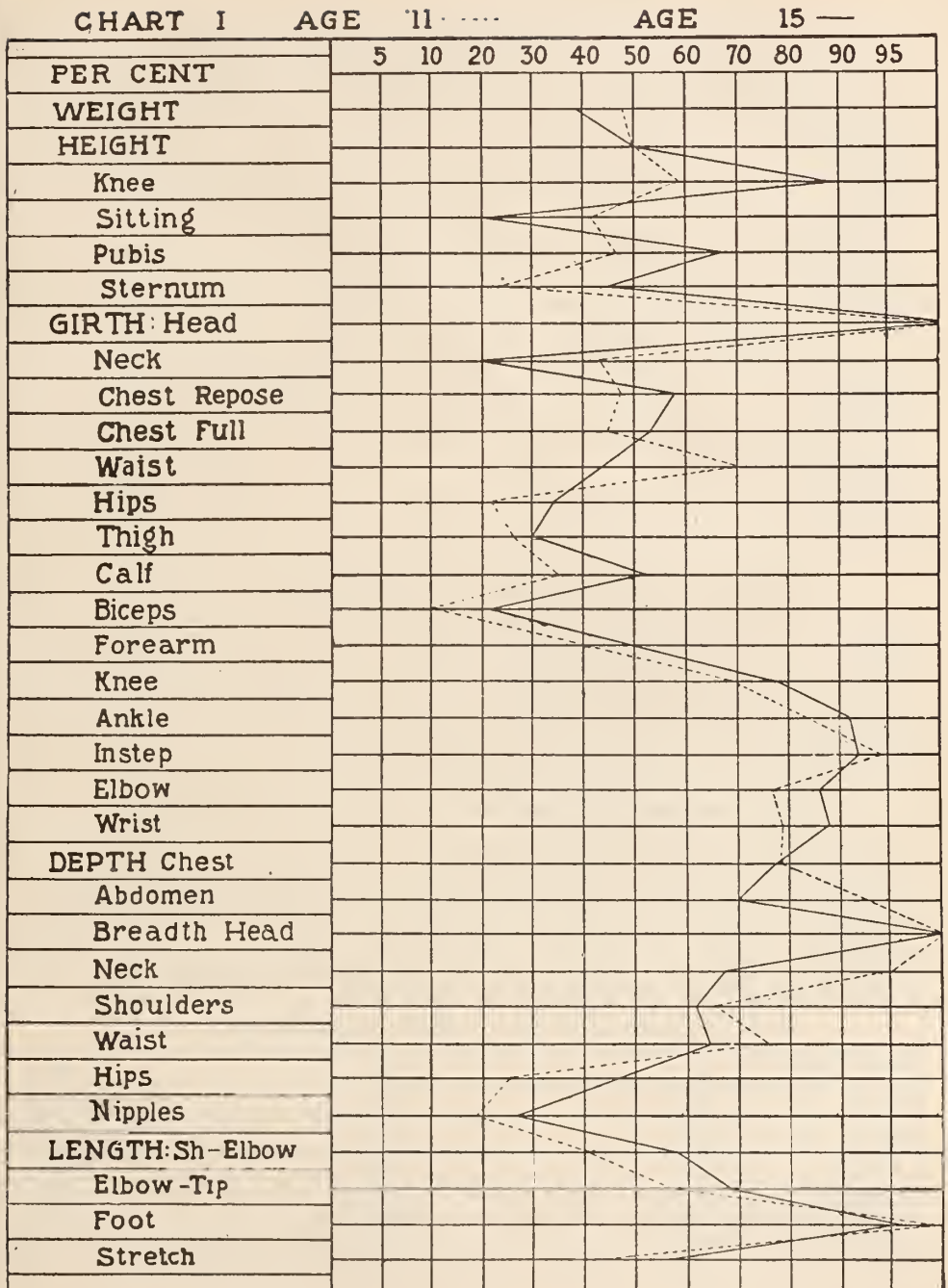
¹ Read before the American Association for the Advancement of Physical Education and reprinted from the Transactions.

other obvious sources of error, these results can hardly be relied upon for general conclusions. Yet the indications are in some cases so strong, and the results for homologous parts of the body so uniformly harmonious, that some inferences at least may safely be drawn. It will be impossible to present a full discussion of this subject here to-day. Only the more important points will be brought to your notice, and these briefly.

Let us now examine Chart I, remembering that the dotted line represents the age 11, the black line the age 15. A glance reveals the fact that at 11 as well as at 15 the boy is, in the relative sizes of the parts of the body, quite different from the man, and hardly less so at 15 than at 11. These differences are particularly well marked in the measurements of the head, vital organs, and feet, since these parts, as is well known, outstrip the others in growth during childhood. Height of knee, sitting height, shoulder to elbow, and elbow to tip show that at 15 a boy's limbs are relatively longer in proportion to his body than those of the man or the boy at 11. In the muscle girths—waist, hips, thigh, calf, biceps, and forearm—the boy is, relatively to height, inferior to the man, while in bone girths—knee, ankle, instep, elbow, and wrist—he is superior. In muscle girths the boy at 15 is, relatively to height, superior to the boy at 11, and more nearly the equal of the man. In bone girths he has also grown relatively larger, except in the case of the instep, but this increase puts him still farther from those proportions which he will finally have as a man.

In order to study the growth of these parts more closely, let us examine Chart II. Here those measurements which are distinctly bone lengths, bone girths, and muscle girths have been selected, and the measurements of the typical boy of each year of age from 11 to 15 have been plotted. To avoid the confusion of too many intersecting lines, numbers have been placed in their stead, the number 1 representing the age 11, 2 representing 12, and so on to 15.

Now it is plain that, if, for any two successive years of age, the numbers fall at the same point for any part of the body, that part has for the intervening year a rate of growth in proper proportion to the growth for the same year in total height. Also, an advance towards the right indicates a relatively accelerated growth in any part, and a retrogression towards the left shows a relatively retarded growth.



C H A R T II

B O N E L E N G T H S

Per Cent	5	10	20	30	40	50	60	70	80	90	95
Sitting			4 5 2		1						
Knee			5				1		2	3 4 5	
Pubis						1	2 3	4 5			
Sh-Elbow					1						
Elb-Tip					2	3 4	5				
							3 4	5			

B O N E G I R T H S

Knee								3 2 1			
Ankle								4 5		3 2 1	
Instep										4	5
Elbow								3	2	1	3 4
Wrist								3 2	4	1	5

M U S C L E G I R T H S

Hips			2	1							
Thigh			3	2 1 4	5						
Calf				3 4 5	2	1					
Biceps		3 2	1		3		4	5			
Forearm			4	5	3 2	1		5			

S T R E N G T H T E S T S

Lungs									1 3 5		
Legs								12	2 4	3 4 5	
Back			1								
Forearm	13 24		2 3 4 5								

S T R E N G T H O F L E G S

Per Cent	5	50	95
Age 11	83	125	185
Age 15	133	213	314
Yale	136	186	247
Harvard	117	176	274
Amherst	112	169	238

Upon examining the bone lengths, we learn that in sitting height—that is, in the length of the vertebral column—there is a retarded state of growth relative to height during the entire period from 11 to 15. In height of knee, on the contrary, the growth is relatively accelerated throughout this period. There is a gradually quickened growth, relative to height, on the part of the vertebral column, while the accelerated growth in height of knee regularly diminishes. Remembering that height of pubis represents the sum of height of knee and length of the thigh-bone, and comparing the intervals between the numbers in the case of height of knee with those for the pubis, it is found that the growth of the thigh-bone in length is, relative to height, greater in the latter part of the period than in the first part. In length from shoulder to elbow the rate of growth appears also to increase after the age of 12, while in length from elbow to tip there is little variation till the age of 14, when the growth is relatively quickened.

In considering these results, due regard must be paid to certain facts concerning the growth of boys which Dr. Bowditch has demonstrated from measurements taken of Boston school-children. Dr. Bowditch has shown that, at about the age of 11 or 12, the growth in height is decidedly retarded, and that immediately afterwards an acceleration in growth occurs, so that, at the age of 13 or thereabouts, a boy's height increases more per year than at any other year of age from 5 to 17. The period of retarded growth for McDonogh boys is from 12 to 13, and the period of accelerated growth the two succeeding years. Regarding total height as being made up of height of knee, length of the thigh-bones, and height of the vertebral column, it is found by calculation from the tables that the retardation occurs in all three parts, while the acceleration takes place only in the vertebral column and thigh-bones, height of knee actually increasing less per year at the age of 13 and 14 than at 11.

An examination of the numbers in the chart of bone girths shows that in all cases there is a retrogression from the age of 11 to 13, and afterwards an advance towards the right till the age of 15. This indicates that the retardation and acceleration of growth in total height are both even more marked in the bone girths. In the case of the instep, which is so much overgrown, the acceleration dies away sooner, as is evidenced by a retrogression after the age of 14.

The chart of muscle girths shows that the growth of the muscles is closely in accord with that of the bone girths. The period of acceleration, however, begins a year earlier in the muscles of the legs,—that is, at 12 instead of 13.

In plotting the strength tests the square of the factor used in magnifying the linear dimensions of the boy has been used, since the power of a muscle is proportional to the area of its cross section. This, of course, is a mere approximation, but it may serve to show something of the development of muscular power in the boy. It appears from the chart of strength tests that strength is developed in the expiratory muscles and those of the legs earlier than in the muscles of the back and forearm. For strength of lungs the numbers fall at the same point for each of the five years of age. Strength of back shows an advance towards the mean, and strength of forearm shows a like advance, but even at 15 it has not reached the $2\frac{1}{2}$ -per-cent. column. In strength of legs a very marked increase occurs between the ages of 12 and 13. This is in entire accord with the growth of the muscles of the legs, for which we found, in the chart of muscle girths, the twelfth year to be the turning-point. The increase, however, is proportionally so much larger than the corresponding increase in size of the muscles as to lead one to suspect that it is due rather to a rapid development of the nerve centres controlling these muscles than to any physical change in the muscles themselves.

This increase in strength of legs goes on at such a rate for McDonogh boys, that at 14 years of age the boy actually appears to be stronger than the man, and at 15 the boy's strength of legs is 213 kilogrammes, while the man's is only 186. The chart of strength of legs is intended to call special attention to this point, and, in order to obtain a wider range of comparison, the tests of Amherst and Harvard students are added. In view of the discrepancies between these tests and those of Yale students, as well as the inexplicable apparent result that a boy's legs are at 15 stronger than a man's, may we not inquire into the value of our strength tests? What is the object desired in making a strength test? To ascertain the absolute power of the muscle or muscles undergoing the test, when called into action, under proper conditions, by the strongest will power of which the person tested is capable. Even then, as Dr. Foster tells us, we probably do not get the maximum contractile power of the muscle, the will being unable to call forth its greatest contractions.

But how shall we know that the will power of the person tested is fully exerted, and that the power of the muscle is brought to bear upon the dynamometer so as to produce the maximum result? These questions are specially applicable to tests taken of young boys, in whom perfect control of the muscles by the will is by no means fully established, and whose awkwardness in handling the dynamometers is a serious obstacle to obtaining the results desired. To obviate these difficulties as far as possible, several boys of about equal strength have been tested together at McDonogh, in order that, by imitation, their strength might be brought to bear in the most advantageous manner upon the dynamometers, and that, by rivalry, they might receive the necessary nerve stimulus. In testing the strength of legs, their knuckles have been firmly secured, and discomfort avoided, by placing soft pads upon the thighs. The results you see before you. May we, in view of this, rely with certainty upon the accuracy of any strength test as at present conducted? I leave the question with you.

Preventive Medicine.¹

BY THEOBALD SMITH, M.D.,

Boston, Mass.

SOCIETY is slowly beginning to recognize the debt it owes to medicine in its various departments, but there is none to which it, as a whole, owes more than to preventive medicine. Possibly some great war, for which so many appear to be languishing, would show what we do not see so plainly in times of peace, the great but quiet and almost frictionless work of sanitary organization holding the reins of a number of restive disease-germs whose power over society is by no means extinct, but very probably as great as ever. Let such a war break down this great sanitary machine even temporarily, and we would have a splendid opportunity of seeing these restive organisms let loose upon the community and scatter typhoid and typhus, small-pox, and cholera and their allies far and wide. We trust that such an opportunity will never come to demonstrate the utility of preventive medicine.

¹ From the Albany Medical Annals.

Let us rather try to enlist the interest and the support of the people by a more sane and civilized method, that of instruction in the laws and principles which control our lives under the complex conditions imposed upon us by modern society.

Of the many ramifications of preventive medicine by which it sends its protecting influence to all the people, the rich and the poor alike, I shall devote a little time only to its function as a guardian of drinking water. When we speak of drinking water nowadays there arises immediately before us its greatest enemy,—that spectre called sewage. The two are inseparable in the mind of the sanitarian, for one cannot be kept pure without suppressing the other. Water is taken from the earth, and sewage is committed to it; water is taken from streams when the earth supply is inadequate or desirable, and sewage is poured into streams. Our great streams as well as our little streams are rapidly becoming mere open sewers. The thoughtlessness and indifference of the bulk of the people to pure water has been strongly and picturesquely expressed by Ruskin:

“Twenty years ago there was no lovelier piece of lowland scenery in South England, nor any more pathetic in the world, by its expression of sweet human character and life, than that immediately bordering on the source of the Wandle, and including the low moors of Addington, and the villages of Beddington and Carshalton, with all their pools and streams. No clearer or diviner waters ever sang with constant lips of the hand which ‘giveth rain from heaven;’ no pasture ever lightened in spring-time with more passionate blossoming; no sweeter homes ever hallowed the heart of the passer-by with their pride of peaceful gladness,—fain hidden, yet full confessed. The place remains (1872) nearly unchanged in its larger features; but with deliberate mind I say that I have never seen anything so ghastly in its inner tragic meaning—not in Pisan Maremma, not by Campagna tomb, not by the sand isles of the Torcellan shore—as the slow stealing of aspects of reckless, indolent, animal neglect over the delicate sweetness of that English scene. Nor is any blasphemy or impiety, any frantic saying or godless thought, more appalling to me, using the best power of judgment I have to discern its sense and scope, than the insolent defiling of those springs by the human herds that drink of them. Just where the welling of stainless water, trembling and pure, like a body of light, enters the pool of Carshalton, cutting itself a radiant channel down to the gravel,

through ways of feathery reeds, all waving, which it traverses with its deep threads of clearness, like the Chalcedony in Moss-agate, starred here and there with the white Grenouillette; just in the very rush and murmur of the first spreading currents, the human wretches of the place cast their street and house foulness; heaps of dust and slime and broken shreds of old metal, and rags of putrid clothes, which, having neither energy to cart away, nor decency enough to dig into the ground, they thus shed into the stream, to diffuse what venom of it will float and melt, far away, in all places where God meant those waters to bring joy and health. And in a little pool behind some houses farther in the village, where another spring rises, the shattered stones of the well, and of the little fretted channel which was long ago built and traced for it by gentle hands, lie scattered, each from each, under a rugged bank of mortar and scoria, and bricklayers' refuse, on one side, which the clean water, nevertheless, chastises to purity; but it cannot conquer the dead earth beyond; and then circled and coiled under festering scum, the stagnant edge of the pool effaces itself into a slope of black slime, the accumulation of indolent years. Half a dozen men, with one day's work, could cleanse these pools and trim the flowers about their banks, and make every breath of summer air above them rich with cool balm, and every glittering wave medicinal, as if it ran, troubled only by angels, from the porch of Bethesda. But that day's work is never given, nor, I suppose, will; nor will any joy be possible to the heart of man for evermore about these wells of English water."¹

Ruskin thus eloquently stigmatizes what is going on everywhere around us with a rapidity which makes us pity our children for the loss that awaits them and the dangers that are piling up around them. Sanitary science has long been warning the public and pointing to avenues of honorable escape from the growing difficulties, but indifference, ignorance, and fear of expenditures are still holding many communities in what appears to become for them a death-like grip. Here, as in many other phases of modern society, education will be the only escape from growing evils. Let us for a moment turn to some significant facts brought out in recent years in regard to the function performed by water in carrying disease, and the means now within reach for minimizing this danger.

¹ Quoted in Poore's "Rural Hygiene."

The dissemination of certain infectious diseases by polluted water-supplies has been demonstrated so frequently that any illustrations would be quite out of place at this time. The fate which overtook the city of Hamburg in 1892, when Asiatic cholera appeared in her midst like a thunderbolt out of a clear sky, is still in the minds of many. All facts brought out by a persistent study of the epidemic pointed to the drinking water. Since then the methods of water analysis have been so far improved that the micro-organism of Asiatic cholera may be quite readily detected in infected water, and other less conspicuous epidemics have been traced to it. In fact, the large watercourses of the German empire were in 1893 and 1894 the highways of this organism, and only the utmost vigilance of the German government prevented a general dissemination of this plague during these years. The vigilance consisted in the establishment of bacteriological laboratories and the utilizations of those already in existence for the examination of samples of water and of the stools of infected and suspected persons on the watercourses. Thousands of samples were subjected to the scrutiny of the microscope and the culture-tube, and the hidden and devious ways of the comma bacillus were laid bare.

Hamburg drank unfiltered polluted river water until the city became paralyzed by this plague. With superhuman effort immense improvements have been effected since then, and now the inhabitants drink only filtered water. For many communities only the severest visitations are demonstrative of danger, and not until hundreds and thousands of victims have paid the penalty demanded by filth is the stimulus sufficient to create a salutary change. Dr. H. P. Walcott, in one of his Lowell lectures, delivered in 1896, referred as follows to certain prophetic utterances of Virchow :

"At a memorable meeting of the German Association for Public Health, held at Berlin in 1883, there was a long discussion upon the question of the disposal of the sewage of large cities. Virchow had maintained, with all the ability which he shows in so many fields of science, that sewage must be kept out of the watercourses, whether large or small. Emmerich, of Munich, also one of the well-known sanitary authorities of the world, had, in opposition, brought up the example of the sewerage system of Munich, adopted under the advice of Pettenkoffer, the Nestor of public hygiene. Here the sewers discharge the sewage into the

Isar, without preliminary treatment of any sort. The river is a very rapid stream, carrying at all seasons a large volume of water, and there does not happen to be any large population on the banks of the stream for whom a water-supply from the river is necessary. There is not, as yet, evidence that the amount of sewage added to the river at Munich has caused any injury to the people living lower down upon the stream.

“Emmerich was not content to rest his case upon the favorable experience of the Bavarian capital, but went on to use these words: ‘Hamburg, also, uses the water of the Elbe, which is soiled with the sewage of Prague, Dresden, and Magdeburg, and never a man in Hamburg has been sickened by it.’ The assembly to which these words were addressed had no answer to make except the wise admonition of Virchow, that an example sometimes answered itself if you waited long enough.

“In nine years the answer came, and has been heard round the world.”

The Hygiene of Pregnancy.¹

BY MARY A. McCAY-WENCK, M.E., M.D.,

Physician to Mary M. Packer Hospital, Sunbury, Pa.



PERHAPS of all the various avenues of thought through which a physician's mind must travel, there is no one subject of such vast importance as is the theme upon which I am about to speak. Perhaps, also, there is no one topic to which, as a rule, so little attention is given by the busy general practitioner. Let us reflect a moment upon its great significance, and then judge if in any other field of work is there placed in mortal care a power so nearly allied to Omnipotency itself as in the teaching of how to best develop a human body as well as the immortal mind and soul ordained to dwell in that same body, ere the “breath of life,” as a distinct and separate body, is breathed into its nostrils.

How many of us remember, when a frail little woman presents herself to us for advice as to how she may free herself from those distressing pains in the back and hips, or from the wretched

¹ Read before the Medical Society of the State of Pennsylvania, held at Harrisburg, Pa., May 19-21, 1896, and reprinted for Practical Medicine.

nausea which so often renders life a burden during the early months of pregnancy,—how many of us, I repeat, remember that it is our positive duty to not only try to subdue aches and nausea, but to explain to her the necessity of such a course, and then to insist upon the expectant mother placing herself under such strict hygienic conditions, mentally, morally, and physically, as will best prepare her for the sacred responsibilities of maternity.

Do we try to instil into that woman's mind the idea that God has placed a seal of accountability upon her, and given into her charge His own power of development,—to be used wisely or unwisely, as she may will? Do we teach her if she be fretful or irritable during those 280 days, that the little life so soon to be visible in her home will in all probability be a cross, worrisome baby, needing a tired mother's attention day and night?

On the other hand, do we tell her that if a constant effort is made to be cheerful and good-natured, and not to allow worries of any kind cause great anxiety during those months of development, the coming little one will be of a happy and contented disposition, filling the house with sunlight, and causing many a whispered prayer of thankfulness for its cheering presence?

Now please do not think I mean by this statement that a woman's disposition while pregnant will be exemplified by the child's life throughout, for, of course, hereditary predispositions from either parent, in mind or body, may eventually show themselves as the infant changes from child to youth, and youth to maturity. I am now speaking only of babyhood, and, once again, I affirm, from a study of over a thousand cases in my own practice, that just as is the mother's disposition during her period of pregnancy, so will be the disposition of the child during its helpless and dependent months.

However, it is not my intention in a ten-minutes' talk to enlarge upon the mental and moral hygiene of pregnancy, for upon those subjects might volumes be written, and still be inexhaustible. My purpose is to simply formulate a few general principles of physical hygiene, to be observed by a pregnant woman during the formative period. These rules, I find, from a careful examination of almost 1300 cases, are at best both crude and incomplete, and in some of the most promising instances, have proven futile and of no good results; but when every obstetrician in the land fully realizes the importance of securing for each and every pregnant woman under his or her care a certain course of preparation,

perhaps experiment and experience may procure for us a formula which will never fail to rid the lying-in period of its torture, and make the pregnant state considered God's greatest blessing to womankind.

In the preparation of the little lecture given to women who apply to me for advice, or who come to engage my services, I tried to keep in mind the one unvarying characteristic of muscle-tissue,—viz., *its irritability*. The muscles are the main actors in labor, whether uterine or abdominal, and therefore, to train them and keep them in a perfectly healthy condition, so as to make them able to do their work easily and properly, places their care paramount to all else.

The irritability of a muscle depends, first, upon the adequacy of its blood-supply: the better the supply of new material, and the more quickly the effete materials are removed, the more work a muscle can do without becoming exhausted; secondly, upon activity accompanied by an increased blood-supply and perfect nutrition.

From these known peculiarities of muscle-tissue I have formulated four headings to a talk given to each of my pregnant patients,—(1) clothing; (2) food; (3) exercise; (4) muscle-toilet.

(1) As to *clothing*. From the moment a pregnant woman is conscious of her condition, the loosest-fitting and most comfortable garments should be worn, and all tight clothing and corsets be abandoned. To a woman accustomed to a corset, its absence will be quite a trial, but a stout muslin jacket will give the needed waist-support without the objectionable stays and whalebones. All heavy skirts should be supported by shoulder-straps, so as to allow entire freedom of motion to the abdominal muscles. No uncomfortable clothing should be worn,—even the feet and hair should be dressed with the one idea of comfort, no matter if fashion does call for high-heeled shoes or plenty of hair-pins, heavy combs, or a chignon.

(2) *Food*.—From the chemical constituents of the different human tissues, a comparatively correct dietary for the formative period may be compiled.

A carefully assorted mixed diet supplying to all the tissues the most necessary food is of course the best, but an avoidance of great quantities of animal food, and in fact of all the foods that contain phosphates and carbonates, will be found beneficial for

one especial reason,—the bones owe to these earthy salts their exceeding hardness, and if these substances be partaken of as little as possible, does it not stand to reason that the hard, unyielding condition of the presenting head during labor would be absent and labor itself be robbed of one of its most trying features? At the Pan-American Congress, held some years ago in Washington, Dr. A. J. Saunier, of Chicago, read a paper on "Aids to Easy Parturition," in which he says: "Pregnancy having taken place, attention should be given to diet. The child's food must be of what the mother partakes, therefore, the condition of the child's bones could be controlled by feeding, as easily as a person could be fattened or reduced in adipose tissue, by regulating the diet. The object was to avoid too great development of the bony system, which would interfere with the moulding of the head and easy passage of the child through the parturient canal. Those foods containing earthy salts in large proportions, should be avoided,—oatmeal, Graham bread, and other cereals, and all things containing large quantities of earthy phosphates; use instead white bread, potatoes, most kind of vegetables, and especially fruits. The latter would keep the bowels open and cause solution of the earthy salts in other articles, so they could be carried off by the kidneys."

The organic acids in fruits of all kinds seem especially grateful to a pregnant woman's stomach, and many a case of "morning-sickness" has been relieved entirely by a breakfast of fruit. In any state, whether raw, dried, canned, or cooked, fruit seems to give fine results, though I cannot fully explain physiologically why. I do not know whether or not the fruit had anything to do with one of the easiest labors at which I ever officiated, but the lady herself claimed the ease of the labor to have been produced entirely by her having eaten twenty-seven bananas during the day on which she was confined.

(3) *Exercise*.—By this is meant exercise (1) for the sake of muscular movement; (2) for supplying the very necessary blood-food (the purest obtainable oxygen) to the lungs; (3) as a means for distracting the mind from the daily routine of home duties and domestic worries; and (4) as the foetal blood is of course aerated by the oxygen taken into the mother's respiratory organs, exercise in the open air procures richer blood for the foetal circulation. Thus we know, by the natural process of breathing the purer outside atmosphere for a certain length of time each day,

the pulmonary tract may be cleaned out and replenished with a fair supply of fuel for another twenty-four hours of in-door life. It is said that eighteen full respirations will cause the lung-reservoir to be fully exhausted and replenished, so that exercise for an hour or two out of doors with an occasional full inspiration ought to furnish oxygen enough to purify the entire breathing-space for one day at least. This daily oxygenating process also has a beneficial effect upon the muscular organism of the parent ; for, aside from the benefit derived by the movements of the lower limbs, it furnishes purer blood-nourishment to her muscle-tissues and aids them in keeping healthy and contractible.

(4) *Muscle-Toilet*.—From the first two months of pregnancy the muscles of the abdomen, thighs, and lumbar regions should be made special objects of care by daily bathings and massage in order to make them pliable, strong, and easily contracted. Until the sixth or seventh month, it is sufficient to order simple nightly spongings all over the abdomen, lower parts of the back, and the upper parts of the thighs, to be followed by enough friction with a coarse towel to stimulate the nerve-terminals of the skin and to open up the pores. This in turn should be followed by a ten- or twenty-minute massage of the same set of muscles, using sweet oil or cocoa oil, or, in poor families, simply clean lard, as an inunction.

During the last six or eight weeks, instead of the nightly spongings, sitz-baths should be ordered, and these followed by the same friction and oil-massage treatment.

This plan of procedure, if carefully carried out, cannot fail to fortify and improve every one of the muscles brought into action during parturition, rendering them pliable and able to work harmoniously together with immense outside force while aiding the uterine contraction within.

In closing up my very imperfect and disjointed talk upon this subject, I cannot resist another short reference to the condition of the mind—or *mental hygiene*—positively necessary to produce the most satisfactory results, in combination with these physical hygienic rules.

According to Webster, hygiene is “that department of medical science which treats of the preservation of health.” Hence the mental hygiene of pregnancy must mean all those conditions which tend to the preservation of a clean, healthy state of the mother’s mind during those 280 days of fœtal development. Of

course, we, as physicians, cannot make over a household wherein is a pregnant female, but in many cases a word of advice from our lips will be carefully studied and faithfully followed, and thus a cloudy home atmosphere be cleared up amazingly.

The sunshine of a pleasant, sympathetic face and voice will flood a friend's mind with warm, grateful light, and prove to be a marvellous influence towards calming all distracting thoughts and worries. Let us impress upon all inmates of such a household the importance of assisting the prospective mother in all her efforts to attain and retain an uninterrupted, peaceful temperament. If we see to this, I am sure the result will astonish us. Thus, and thus only, will the newly-created mind of the infant come into the world unhampered and unbiased by bad impressions produced, latent they may be, but nevertheless produced *in utero*. Perhaps I am an enthusiast, or, in common parlance, a full-fledged crank, upon the topic of my paper, but I am fully convinced that were even these crude and imperfect suggestions carried out to the letter in every case put under our care, thus making us teach and watch wives and daughters during these important times of their lives, and again insist upon the granddaughters following the same routine,—by the time the third, fourth, or fifth generation will have arrived, pregnancy and childbirth will be freed from agonizing pain and the pregnant state be considered, instead of a curse, a distinct mark of divine favor.

Perhaps my religious views may be deemed heretical and at variance with the apple-story of Eve in the Garden of Eden, but we are taught to judge by the love dwelling in our own hearts towards our mortal daughters, of the greater and fuller love of the immortal divine Being for us, and therefore I cannot believe that the great loving, pitying heart of our heavenly Father would condemn his children forever to suffer the awful agony of travail without some merciful provision having been made by which all pain may be eliminated from the parturient chamber and also by which there may be left within the shapely, healthy body of the tiny new-comer a shapely, healthy *mind*,—fit abode for the pure, white soul, newly stamped with God's own perfect image.

A MAN "too busy" to take care of his health is like a workman too busy to sharpen his tools.

EXERCISE will help a young man to lead a chaste life.

The Welfare of the Community demands that Marriage should be Regulated.¹

BY DANIEL R. BROWER, M.D.,

Professor of Mental Diseases and Therapeutics, Rush Medical College ; Professor of Mental and Nervous Diseases, Woman's Medical College, Chicago.



THE closing hours of the nineteenth century are full of marvellous results in science and art, and of wonderful progress in medicine and surgery, but in the midst of these brilliant achievements may be seen on every side insanity, pauperism, criminality, and the degenerating effects of various vices of nutrition so rapidly increasing that they will overwhelm the race unless they can be arrested. These melancholy effects are produced, at least in part, by the violation of the laws of heredity, constantly taking place in unregulated marriages. Under our higher civilization abnormal man, be he defective, dependent, or delinquent, is propagated, cultivated, and protected, his feeble and crippled offsprings are nursed to manhood and sent forth to produce their kind. Under savage and semi-civilized conditions these abnormalities are speedily extinguished, the deformed and the weaklings have no place in their system, and some way or other are soon cut off.

The physicians, who have always been the advance guard of progress, ever watchful of the welfare of those intrusted to their care, must rise in their might, find the remedy, and apply it to these defects of this brilliant age. The study of these defects of our civilization develop startling revelations.

First, consider the increase of insanity in Great Britain. In 1860 the proportion of insane to the population was 1 to 523 ; in 1870, 1 to 411 ; in 1880, 1 to 360 ; in 1890, 1 to 320. The proportion of the insane to the population in New York to day is 1 in 315. If this increase is to be stopped, it must be by the earnest efforts of such distinguished members of the profession as are gathered here.

Consider the question of crime. The census of 1890 places

¹ Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896. From the Journal of the American Medical Association.

the criminals in prisons and reformatories at 82,329. If only one-third are incarcerated this gives a criminal population of about 250,000. Between the years 1850 and 1890 the population increased 170 per cent. ; the criminals increased 445 per cent. Between the years 1880 and 1890, the total population increased 24.5 per cent. ; the criminal population increased 45 per cent.

The statistics of pauperism show equally startling defects in our sociology. Dugdale, in his admirable study of the "Juke" family, shows how from one degenerate man, in seven generations, there were developed 1200 criminals and paupers. McCulloch, in his history of the "Ben Ishmael" family, showed as the offspring of this degenerate, 1750 criminals and paupers. Maudsley says that an idiot is not an accident, nor an irreclaimable criminal an unaccountable casualty. Our mental and physical condition is an inheritance, an estate in trust, received from our ancestors ; we make it better or we make it worse, and we hand it down to our children. Heredity, according to Ribot, "that biological law by which all beings endowed with life tend to repeat themselves in their descendants," is the great underlying factor, and yet, while we are extremely careful to observe its demands in the breeding of horses and cattle, we pay but little attention to it in laying the foundation for the physical, mental, or moral condition of our children.

The laity need to be instructed on the subject ; they should be taught that insanity, epilepsy, tuberculosis, and drunkenness are all most certainly transmissible, and that out of them proceed pauperism and crime, and that he or she who possesses any one of these, or any other vice of nutrition, by marrying assumes a terrible responsibility in the suffering and misery they inflict upon their progeny.

Fortunately for the race these degenerates tend to extinction, and in the third and fourth generation, if not sooner, they have paid the penalty, by annihilation, of their violation of the laws of nature.

Some of the laity are already deeply interested in this matter, and are seeking to find ways and means by which they may avoid these consequences ; and the tendency to reversion furnishes us with the method by which the milder cases of hereditary taint may produce children who will but slightly inherit the abnormalities. We would, of course, advise such persons to unite in wedlock with those as far as possible removed from the vice of con-

stitution which they possess, and then their progeny may be thrown back to the normal type.

The most perplexing as well as the most active factor in producing the defects of our civilization is alcoholism. The appetite for alcohol may be acquired, but it can be transmitted to the children, and various diseases and degenerations follow. Echeverria collected the statistics of sixty-eight males and forty-seven females who were alcoholics. The number of children born to them was 476. Of these, 23 were still-born, 107 died of convulsions in infancy, 3 suicided, 96 had epilepsy, 13 were idiots, 19 maniacal, 7 had general paresis, 5 had locomotor ataxia, 26 had hysteria, 23 paralysis, 19 deformed, 9 chorea, 7 strabismus, 3 were deaf, and 205 exhibited drinking tendencies.

Dr. Tarnavskin examined at St. Petersburg prostitutes who had been inmates not less than two years, and found eight-two per cent. had parents who were habitual drunkards.

Boies makes the statement, "that the consumption of distilled spirits, per capita, has not materially changed even in fifty years in this country, but the consumption of malt liquors has increased 738.1 per cent. contemporaneously with an increase of 445 per cent. in criminals in fifty years. These statistics show very plainly that the temperance reformers have not reached the masses. While the decanter is no longer seen on the sideboard, and the consumption of wine among the well-to-do people has diminished, yet the saloons are multiplying on every side. Surely we cannot permit this condition of things to continue longer, and must recognize the inadequacy of the forces that are contending with it. The physicians must educate the laity, must impress them with a knowledge of the disastrous effects of alcoholism, and through their co-operation secure such legislation as will remove the blot from our civilization.

In the midst of these exhibits, surely the welfare of the community demands that marriage should be regulated. It is horrible to contemplate what will be the condition of the race in the future, and what will become of our social and political institution, if this wholesale production of abnormalities does not cease.

In most of the States of the Union a marriage license is necessary before the ceremony can be performed, but its requirements are insignificant. Let us agree that, in addition, proper evidence must be furnished that both parties are in good health; that they are not insane, criminals, paupers, alcoholic nor narcotic inebri-

ates ; that they are not tuberculous, cancerous, nor epileptic, and that they have not active venereal disease.

If the members of this great profession will unitedly advocate this great reform, they will succeed, and more than ever deserve the title of public benefactors.

The Disinfection of Books by Vapor of Formalin.¹

BY ELMER GRANT HORTON, B.S.,

Thomas Scott Fellow in Hygiene, University of Pennsylvania.



A GREAT deal has been written recently concerning the use of formalin as a preservative, antiseptic, and disinfectant. Investigators unite in acknowledging that it possesses these properties, while they differ in opinion as to the degree of efficiency, especially in the case of disinfection.

Dr. John S. Billings, director of the Laboratory of Hygiene, University of Pennsylvania, proposed to the writer the testing of the efficiency of formalin vapor as a disinfectant for books, and also for rubber and surgical instruments. The writer wishes to here express his thanks to Dr. Billings, and also to Dr. A. C. Abbott, first assistant, Laboratory of Hygiene, University of Pennsylvania, for their kind advice and timely suggestions during the course of this investigation.

We would naturally expect that books, particularly those of public libraries, passing through many hands under various conditions, would need disinfection ; for at times they are handled and read by persons afflicted with infectious diseases, and may, therefore, serve as channels through which the disease may be disseminated. Nor is this now a matter of conjecture, for Du Cazal and Catrin² have shown that books may be the vehicles of contagion. The results of their experiments were positive for the diphtheria bacillus, streptococcus, and pneumococcus, although negative for tubercle bacillus and bacillus of typhoid.

¹ From the Medical News. From the Laboratory of Hygiene, University of Pennsylvania.

² Annales de l'Institut Pasteur, December, 1895, p. 865. "De la Contagion par le Livre."

There are numbers of cases of scarlet fever in which the source of infection is reasonably believed to be a book or letter.

In some places, as in parts of England, the only remedy for infected books has been destruction by fire. This waste of books, often valuable, may be averted if disinfection can be otherwise thoroughly accomplished. Messrs. Du Cazal and Catrin propose, as a means of disinfection, the sterilization of the books by the autoclave, with the exclusion of bound volumes and board covers, which are injured by this treatment. Miquel,¹ in his efforts to obviate this difficulty, used a strip of cloth fifteen to twenty centimetres wide, attached at the ends to rollers, around one of which the cloth was wound and dipped into a solution of formalin, whose specific gravity had been raised from 1.075 to 1.2 by the addition of calcium chloride crystals. This cloth was spread directly beneath a frame or rack holding the books, with the edge of the leaves downward. Cloth, rack, and books were then covered by a large jar, and at the end of twenty-four and forty-eight hours were found to be sterile. Van Ermengem and Sugg² found that in a closed vessel sterilization was effected in twenty-four hours by sprinkling the leaves of an infected book. They found that books were not disinfected in a closed chamber after twenty-four hours if a weight of two kilogrammes rested on the books; but they obtained positive results in twenty-four hours if a vacuum was produced, and then air, saturated with formalin, admitted. In their experiments with elevated temperatures, these investigators found books were disinfected at a temperature of 60° C. in twenty-four hours with formalin. As a result of their researches, Van Ermengem and Sugg consider books as difficult of disinfection. Lehmann³ agrees with them in this conclusion.

It was our intention to test as simple a method as possible, and yet one that was efficient. It would not be a practical matter to retain for several hours a temperature as high as 60° C. (140° F.), especially for large spaces. The following experiments were accordingly conducted at room temperatures varying from

¹ *Annales de Micrographie*, November, 1884, p. 588. "Contribution nouvelle à l'Étude de la Désinfection par les Vapeurs d'Aldéhyde formique."

² *Archives de Pharmacodynamie*, 1894, Vol. 1, fasc. 2-3. "Recherches sur la valeur de la Formaline à litre de Désinfectant."

³ *Münchener medicinische Wochenschrift*, 1893, No. 32. "vorläufige Mittheilung über die Desinfection von Kleidern, Lederwaren, Bürsten, und Büchern, mit Formaldehyd."

19° to 31° C. (66.2° to 87.8° F.). The vapor was obtained by simple evaporation, and not by the burning of methyl alcohol, nor was addition made to the formalin of calcium chloride or any other substance. The solution used was received from the firm of Bender & Hobein, Munich and Zurich, and had the specific gravity 1.084.

The action of formalin upon the anthrax spore has been determined by others. As neither *B. anthracis* nor its spore are apt to occur in books, this organism was not employed in our experiments. Virulent cultures have been used of *B. typhi abdominalis*, *B. diphtheria*, and *staphylococcus pyogenes aureus*, all of which are likely to occur in books.

The following was the method pursued: To avoid injury to the books by the cutting of the leaves, a sheet of paper was given a single fold, and between the two leaves thus formed was placed a piece of paper two centimetres square. After sterilization by dry heat of the sheets with their enclosed squares, they were placed in a book at desired pages, and the squares smeared with a twenty-four-hour-old bouillon culture of the organism in question. Drying of the culture was accomplished in from one to two hours by placing the book in the incubator, 37° C. (98.6° F.). At this point control cultures were made from the squares. The book was then placed under a bell-jar of known capacity. No weight rested upon the books except in few cases, when other light books were on top. Sometimes the books were stood on end, again they rested on the side, always closed. A measured amount of formalin was placed in a shallow glass dish under the bell-jar, and allowed to evaporate,—the surface of evaporation varying from twenty-six to seventy square centimetres. After removal from the exposure to formalin, the books were allowed to stand for various periods of time protected from dust. At several dates after the exposure, portions of the square were placed in bouillon at 37° C. (98.6° F.), and observed daily for some time.

The questions presented were:

(1) Can books under simple conditions be disinfected by the vapor of formalin?

(2) What is the maximum amount of air per cubic centimetre of formalin that may be used and yet the books be sterilized in a limited time,—as twenty-four hours?

(3) Will a shorter exposure than twenty-four hours suffice?

(4) Will an increase in the length of time of exposure counterbalance a decrease in the amount of formalin employed?

SERIES I.—Length of exposure, twenty-four hours. Books of from 150 to 870 pages, mostly octavo books of 200 to 400 pages. Dates of experiments extending from March 11 to June 1, 1896. Controls all positive; g = growth; o = no growth.

Cubic Centimetre of Air to One Cubic Centimetre of Formalin.	Designation of Experiment.	B. Typhi Abdom- inalis.		B. Diphtheria.		Staphylococcus Pyogenes Aureus.	
		No. of Tests.	Results.	No. of Tests.	Results.	No. of Tests.	Results.
137	a	4	o	4	o	4	o
150	b	2	o	2	o	2	o
300	c	1	o	1	o	1	o
300	d	. . .	. . .	1	o	1	o ¹
375	e	. . .	. . .	. . .	. . .	2	o
375	f	2	g	2	g	2	g
400	g	. . .	. . .	{ 1	{ o	. . .	. . .
500	h	. . .	. . .	{ 2	{ o ¹	3	g

SERIES II.—Greater proportions of air, and mostly longer exposures. Octavo books of 150 to 400 pages. Controls all positive.

Cubic Centimetre of Air to One Cubic Centimetre of Formalin.	Designation of Experiment.	Time of Exposure.	Typhoid.		Diphtheria.		Aureus.	
			Tests.	Results.	Tests.	Results.	Tests.	Results.
600	i	25 hrs.	. . .	. . .	. . .	. . .	2	g
800	j	26 "	. . .	. . .	2	g	. . .	. . .
800	k	19½ "	. . .	. . .	1	g	2	g
1000	l	41 "	. . .	. . .	2	g	2	g
900	m	5 "	2	g	2	g	. . .	. . .
400	n	21 "	3	o	2	o	{ 2	o
530	o	5½ "	. . .	. . .	. . .	. . .	{ 1	g
							3	o

¹ In these three tests a growth was obtained a few hours after removal from the vapor, but succeeding trials from the same square after two days or more were negative. This raised the question as to whether the vapor of formalin had condensed between the leaves and thus given a prolonged exposure after removal. Accordingly, parallel experiments were made, differing only in that the books were opened and exposed to air at the inoculated places as soon as removed from the bell-jar. The same result as previously observed made it clear that it was a case of weakened vitality in the organisms.

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FTX SERIES III.—Exposures one hour. Octavo books of 176 to 600 pages. Controls all positive.

Cubic Centimetre of Air to One Cubic Centimetre of Formalin.	Designation of Experiment.	Typhoid		Diphtheria.		Aureus.	
		Tests.	Results.	Tests.	Results.	Tests.	Results.
400	p	...	...	...	...	{ 1 2	g o
350	q	2	g	...	...	...	...
350	r	...	...	...	...	2	g
300	s	...	...	...	...	{ 1 1	g o
300	t	...	...	...	...	2	o
250	u	...	...	1	o	1	o

SERIES IV.—Exposures fifteen minutes. Octavo books of 130 to 732 pages. Controls all positive.

Cubic Centimetre of Air to One Cubic Centimetre of Formalin.	Designation of Experiment.	Typhoid.		Diphtheria.		Aureus.	
		Tests.	Results.	Tests.	Results.	Tests.	Results.
400	v	2	g				
350	w	...	...	...	...	2	g
300	x	...	...	...	...	1	o
300	y	2	o	...	...	...	...
300	z	2	o	...	...	...	...
250	aa	...	...	1	o	1	o
250	bb	...	...	2	o	2	o

These results demonstrate that one cubic centimetre of formalin to 300 cubic centimetres of air will thoroughly disinfect books in fifteen minutes, while with an exposure of one hour no greater amount of air can be permitted without vitiating the result. If the exposure be extended to twenty-four hours, disinfection failed to be obtained with 375 cubic centimetres of air to one cubic centimetre of formalin. In a few cases, experiments *g*, *n*, *o*, *p*, positive results were obtained where a larger amount of air was used, yet sterilization is not sure with more than 300 cubic centimetres of air to one cubic centimetre of formalin.

Experiments were also conducted to determine the detrimental action, if any, on instrument and rubber. No injury was perceptible to instruments nor to any form of rubber after an exposure of twenty-four hours in air saturated with vapor of

formalin. These articles were not, however, subjected to repeated exposures for a large number of times.

The white deposit spoken of by some authors as an objectionable product, appeared only to a slight degree on the glass-plate where the dishes containing the formalin stood, and it did not show in the least on the books, rubber, instruments, nor on the interior of the bell-jars.

CONCLUSIONS.

(1) Books can be disinfected in a closed space, simply by vapor of commercial formalin by using one cubic centimetre of formalin to 300 cubic centimetres or less of air.

(2) The vapor of formalin is rapid in its disinfectant action. The effect produced in the first fifteen minutes is practically equivalent to that observed after twenty-four hours.

(3) An increase in the amount of air to each cubic centimetre of formalin is not counterbalanced by an increase in the length of time of exposure.

(4) In case the disinfection has been incomplete, the vitality of the organisms has been so weakened that they survive only if transferred in a few hours to media, suitable for their development.

(5) The use of vapor of formalin is not detrimental as far as observed in any manner to the books, nor is it objectionable to the operator beyond a temporary irritation of the nose and eyes, somewhat similar to that produced by ammonia.

“Newcomb.”—A Substitute for Basket-Ball.¹

BY CLARA G. BAER,

New Orleans, La.



HIS game is the outgrowth of a demand on the part of the members of the Class of '95 of Newcomb College, New Orleans, La., to become initiated in the handling of the basket-ball. We had ordered a set of baskets, and while patiently waiting their arrival, the substitute was inaugurated. Since then I have found it an excellent means of keeping larger classes interested in comparatively little space. This is scarcely practicable in basket-ball, when, in

¹ Read before the American Association for the Advancement of Physical Education.

a room, say 62 x 42, about forty pupils wish to engage in the sport. As no apparatus is required beyond an ordinary light foot-ball, it is practically within the reach of every one.

In aiming to make the gymnasium what it should be, a place of recreation or rest through change of occupation, the joyous abandonment that is the result of participating in lively, life-giving games is sufficient reason for their introduction. As a distinct feature in the work of the gymnasium, then, they have

“NEWCOMB.”

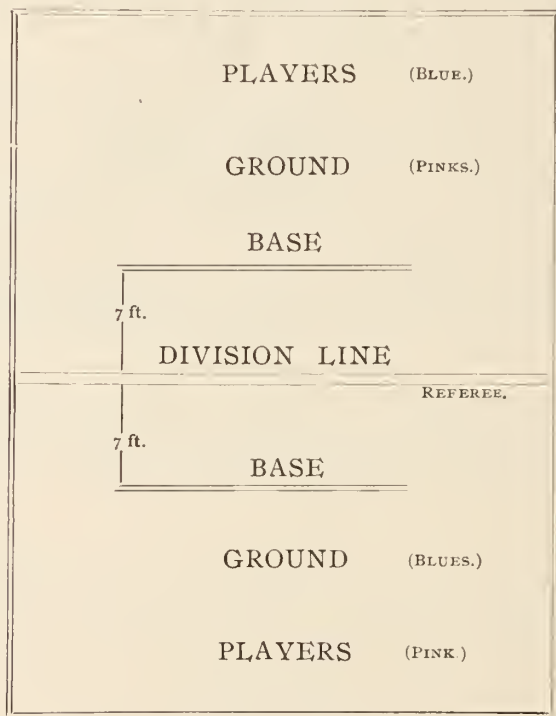


Diagram of the room.

come to stay. It only rests with the instructors to see that the principles underlying all gymnastics are adhered to. A game, to have a place in the gymnasium, should have a purpose.

What we hoped from the “Newcomb” we have not been disappointed in. It teaches alertness, lightness; the ability to remain on one’s feet; good judgment in a sure aim; gives strength to throw and power to hold. A few simple rules materially aided in bringing about the result.

HOW TO ARRANGE THE GAME.

Divide the room into two equal parts by drawing a chalk-mark across the floor. This is called the "Division Line." About seven feet each side of this line draw shorter lines for the Bases. If convenient, it might be well to draw these with colored chalk; or, better still, have both Division Line and Bases painted on the floor (black paint preferred) from two to three inches wide.

The space between Bases is called "inside" of the Base; and beyond, where the players stand, "outside." For convenience, the players are designated by colors or numbers. If the class colors are pink and blue, one-half of the class plays pink; the other half blue. The Blues guard the ground of the Pink, and *vice versa*. The players are arranged at irregular intervals beyond the Bases, which they are not permitted to cross except when the ball is thrown up by the referee (the instructor). This is done at the beginning of the game, to decide which side shall have possession of the ball, and after each foul. If the ball is batted back into the neutral ground by one receiving it, it is called "out," and does not count for either side.

THE OBJECT OF THE GAME.

The object of the game is to make the ball touch the opposite ground beyond the Base, when it is called a "touch-down," and counts three for the side sending the ball. At first "touch-downs" are easily made, but when the players become expert in handling the ball, it is seldom permitted to reach the ground, and the interest increases proportionately.

RULES.

- (1) The players shall stand outside of the Bases.
- (2) The player shall not step inside of the Bases except when the ball is thrown up at the beginning of the game, and after each foul.
- (3) The ball must be thrown by the hands. It may be thrown with one or with both hands. It must not be kicked.
- (4) No player shall catch or throw the ball while on her knees. She must be standing.
- (5) No player shall fall on the ball.
- (6) A "touch-down" shall count three for the side sending the ball.

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(7) A foul counts one against the side offending.

(8) A majority of points shall decide the game.

(9) The referee shall throw the ball directly upward from Division Line.

(10) The referee shall decide the time,—keep account of “touch-downs” and fouls.

(11) If there is too great a rush for the ball when thrown up by the referee, a captain may be chosen for each side, when they only are permitted to cross the Base Lines.

FOULS.

(1) Throwing the ball between Division Line and either Base.

(2) Pushing a player in order to gain possession of the ball.

(3) Violating Rules 2, 3, 4, and 5.

TACTICS.

As the object of the game is to guard the ground on which you stand, cover it as effectually as possible by even distribution of players,—take care that the best players are not together. If you have a weak spot, try not to let the opposite side discover it, or they will throw their ball in that direction. Vary your plays. For a time, aim far beyond the Bases; then, suddenly, throw the ball just outside of the Base. This is a difficult play, and should only be attempted by one who has a sure aim, as it may lead to a “foul.” For long distance, throw high, or the ball may be intercepted. A low ball, when well sent, is very effectual; for, unless a player has her movements well under control, in stooping, she is apt to fall on the ball, which counts a “foul” against her side, beside the “touch-down,” if she fails to catch the ball. Whenever possible, save a player on your side from violating Rules 4 and 5.

Personally, strive yourself to be the best, for the more expert the individuals become, the better will be the playing of each side as a whole.

BODY and mind are both gifts, and for the proper use of them our Creator will hold us responsible.

PLATO called a man lame because he exercised the mind while the body was allowed to suffer.

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EDITORIAL

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COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

A Political Suggestion.

FROM the stand-point of the sanitarian, it would be much better for the health of the people of these United States if such trying contests as that but recently concluded did not follow one another so closely.

Still such is the law of the land and must be accepted ; no sooner are we done with one campaign than plans for the next are commenced.

This extraordinary contest just closed has conclusively demonstrated that the American citizen is an intelligent, thoughtful, reasoning, logical individual ; that he is capable of receiving, digesting, and assimilating information ; that he is not so much a creature of impulse as of reason, and it suggests to us a thought for the next national contest.

We would suggest a subject that has been too long neglected, —*the health of humanity*. To those of us who have given thought to the subject there is no question but that the health of the people should be the first aim of good government, for without health all else is useless. The masses recognize and admit that health is the most desirable of all possessions, even though they do not always act in accord with this admission. Now, then, let us thus early suggest the incorporation of sanitary planks in one of the next national platforms ; let it be an issue, and if the campaign should be of the same educational character as that just

closed, the amount of good that would be accomplished would be absolutely beyond the possibility of computation. Of course, we know that this suggestion will be regarded by many as the vaporings of a crank, but it is made in sober earnest.

The publicity, the newspaper discussion, the oratorical efforts of a presidential campaign would do more to enlighten the people in matters pertaining to health than could be done in any other way. While sanitary education is the need of the day, we are satisfied that sanitary legislation, complete, comprehensive, systematic legislation, is absolutely essential for the greatest welfare of the people, yet there is a strong opposition in many quarters to sanitary legislation, this opposition springing from ignorance of its beneficence.

The search-lights of a political campaign would rapidly dissipate this ignorance.

Chewing.

PHYSICIANS and thoughtful persons have always emphasized the necessity of chewing as a preliminary of good digestion ; it is a fact, well recognized, yet ignored, by the majority of persons. Now we are about to preach the doctrine of "chewing as a pleasure," for when those who eat, not only for nourishment, but for pleasure as well, come to realize that this pleasure is greatly enhanced by chewing, perhaps we can secure a more nearly universal use of the teeth.

Those of us who derive sensual pleasure from the act of eating do so because of the impression made by that which we eat upon the nerves of taste. It is truly a matter of individual temperament whether this impression is pleasant or unpleasant, because that which is repellent and nauseous to the taste of some is pleasant and acceptable to the taste of others.

When we chew, and by so doing macerate any given article of food, we thereby liberate the juices, or essence, or extractive matter that gives to the article in question the flavor that is either pleasant or otherwise, so that the impression made upon the nerves of taste is intensified, as it were ; hence, be the particular article pleasant or disagreeable, the degree of pleasure or distaste will be in proportion to the amount of chewing.

Not only this, but more ; it is a fact, demonstrable by trial, that many articles of food, not generally regarded as specially

palatable, will, if thoroughly well chewed, give out a flavor, or an essence, that will prove very gratifying to the sense of taste.

Try, then, to cultivate the habit of chewing; not only will it help the dyspeptic, but he who enjoys the pleasures of eating will by this habit have these very pleasures many times multiplied.

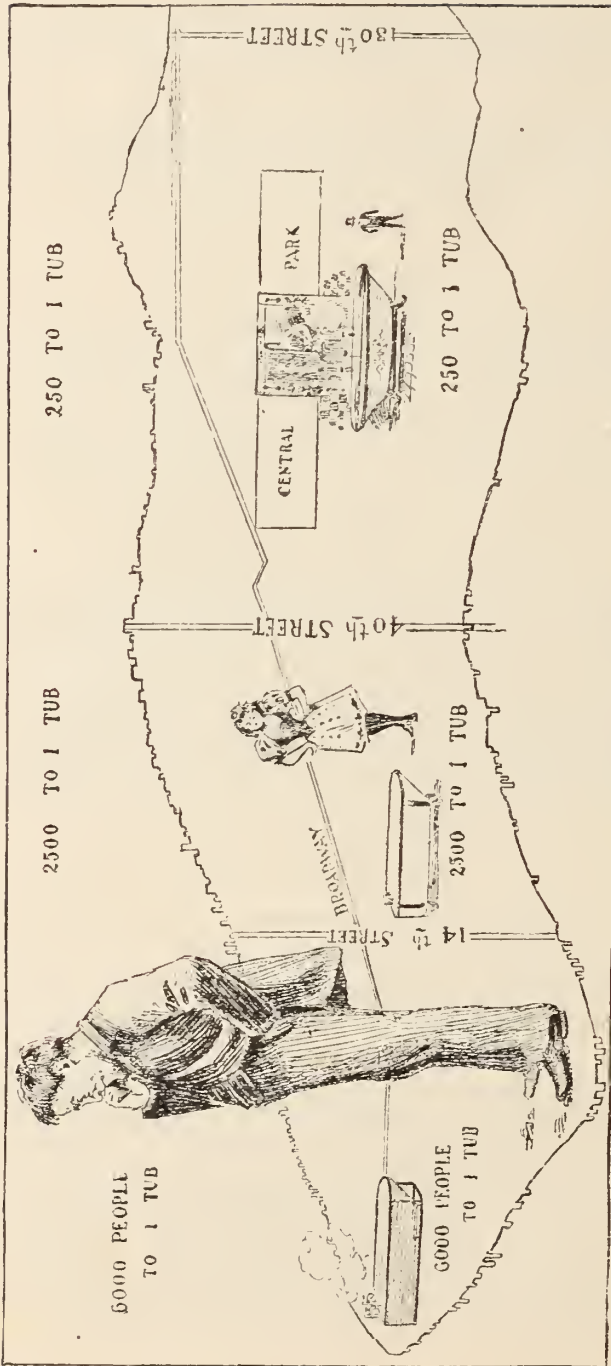
Trifles.

TRIFLES preserve health and trifles cause disease. One great stumbling-block in the onward march of hygiene is the idea, erroneously held by many, that a hygienic life necessarily implies a life of great self-denial and self-sacrifice; hence, thoughtless humanity instinctively recoils against any suggestions of a hygienic nature. Until the subject is rightly understood, there is, we admit, apparently some foundation for this idea, which is strengthened by the way in which some sanitarians preach, and try to enforce the doctrines of hygiene.

Life is a matter of habit to a much greater extent than most of us realize, and if we only take a little trouble to cultivate habits that are healthful rather than those conducive to disease, a hygienic life becomes easy to us; it becomes habitual, and we are not conscious of any sacrifice of comfort or desire; on the contrary, we are conscious only of the pleasure and satisfaction possible only to the healthy individual.

Tea and Dyspepsia.

WE have already written many times on this subject, but must do so again, because we are really appalled to see how much dyspepsia is caused by the pernicious habit of tea-drinking. Daily, almost, do we encounter human volcanoes, in a state of gaseous eruption, annoying to themselves and distressing to their companions. Repeatedly does inquiry elicit the reply that these human balloons drink tea. Firmly have we become convinced that tea is a poison, and that it is one of the most prolific causes of "windy indigestion." The confirmed "tea-toper" may laugh at this assertion, but she cannot laugh at personal experience, and if she will heed our suggestion to let tea alone, she will soon come to our way of thinking.



Cleanliness.

IT was General Booth, of the Salvation Army, who asserted his belief that “soapology” and “scrubology” are equally as efficient christianizing and civilizing agencies as is theology. That civilization, cleanliness, and refinement go hand-in-hand is unquestioned, and we have never seen this fact more neatly portrayed than in the above cut, from the *New York Journal*, illustrating the bath-tub map of New York.

**Proposed Amendments to the Buffalo (New York)
Code of Health.**

AMENDMENT to Section 26, Chapter XXV, by adding,—
“It shall be the duty of the Overseer of the Poor to furnish, free of charge, to the needy and worthy sick poor, such quantity of ice and at such periods as may be requested in writing by the various city physicians under his direction and approved by the Health Commissioner.

“Each city physician shall keep a record of such demands upon the Overseer of the Poor and make separate monthly reports of the same, but shall in no case order ice except in cases of sickness.”

Amendment to Section 81, Chapter XXV, by adding,—

“And it shall be unlawful for any person or persons to use or to engage in the sale of any bottle, mechanism, or other device for the artificial feeding or nursing of infants or children under 3 years of age, that has connected therewith a rubber tube, hose, or similar contrivance.”

Proposed Section 155, Chapter XXV.

“Spitting upon the sidewalks of the public streets, upon floors of public buildings, hotels, and all street-cars, railway-cars, and other public places is hereby forbidden.

“Officers in charge or control of all such buildings, cars, and public places shall keep permanently posted, in conspicuous places, in each public building, street-car, railway-car, and other public places, a sufficient number of notices forbidding spitting upon the floors.

“Janitors of public buildings and places, and conductors of all street-cars and railway-cars, shall call the attention of all violators of this ordinance to such notices.”

The Health Department of Greater New York.

According to the proposed charter of Greater New York, there will be but one health commissioner, who may be appointed or removed at pleasure by the mayor. The main office of the department will be on Manhattan Island, but there will be a branch office with a deputy commissioner, a register of records, and a sanitary superintendent in Brooklyn, and possibly in other boroughs. The bureau of the register of records and of the sanitary superintendent will remain as at present constituted.



Soap.

Soap has been in use for 3000 years, and is twice mentioned in the Bible. A few years ago a soap-boiler's shop was discovered in Pompeii, having been buried beneath the terrible rain of ashes that fell upon that city 79 A.D. The soap found in the shop had not lost all its efficacy, although it had been buried 1800 years.

Small-Pox.

In every large metropolis small-pox is an annual epidemic. In country towns and open districts its invasions are more distant; at uncertain intervals of some years when numbers contiguous are attacked at the same time. . . . Very few of the human species escape the small-pox, especially in populous cities and towns wherein there is always lasting variolous fuel. . . . A mere handful of the native progeny of the metropolis can be supposed to have escaped an infection with which they are constantly enveloped.—Dr. Black, writing in 1747.

Why Stone Walls are Damp.

The walls of a stone house and sometimes of a brick house are covered with dampness. This is due to the very same causes by which dew is deposited on grasses or moisture on the side of a glass or pitcher that is filled with ice-water and brought into a warm room. The walls become cold, and as stone is a non-conductor of heat, they remain cold for a long time. When the weather changes suddenly from cold to warm the air becomes filled with moisture, for the warmer the air is the more moisture it will absorb. When this warm air strikes the cold wall, the moisture is deposited on it from the air, which is suddenly cooled by contact with them, and as the warm air is continually coming in contact with the cold walls, the dampness accumulates until it appears like a dew upon them, and pours down in streams at times. It is easily prevented. No plaster should be put directly

upon brick or stone, but furring strips should be nailed to the wall and the laths put on these. Cellars are frequently made very damp in the same way by too much ventilation in warm weather.

Criminality of Hygienists.

A witty article in the *Revue médicale de Paris* laments the growing scarcity of the sick and the increasing numbers of physicians. It denounces Jenner, Pasteur, etc., as guilty of depriving their colleagues of their daily bread and wrecking the profession. Especially is this the case in the cities where prophylactic and hygienic measures are most strictly enforced and the sick number less in proportion. It adds a few figures in confirmation from the death records of Paris during the last ten years, stating that the figures to date for 1896 show even more marked reduction :

Deaths caused by	1885-1890.	1890-1895.
Small-pox	1271	656
Scarlet fever	1225	946
Measles	6671	5192
Diphtheria	8383	7588
Typhoid fever	5904	3493

Milk and Praise.

Mary Lamb said once that children were fed on milk and praise. One woman thought of this speech not long ago, when she was walking past a little home where two small boys were raking up the dry leaves in the front garden.

Some one, evidently the mother, appeared at the door, and made a casual remark pleasantly enough about what they were doing.

One little fellow called shrilly, "Aren't we good boys to do this for you, mamma?" And the passer-by reflected, "Why wouldn't it have been as simple for that mother to take the initiative in that remark? Why couldn't she have exclaimed, 'What good boys to do this for me?'" There is nothing so potent in this world as the love of approval, and no such incentive towards deserving it as a word of commendation.

It is a pity that more mothers do not recognize its tremendous value in government. One phrase of approval will do more than fifty scoldings.

A Method of Inviting Sleep.

The following method of inviting sleep to tired, overworked, and overworried brains has proven of infinite advantage in my experience, so far as tried, writes Dr. J. B. Learned to the *Boston Medical and Surgical Journal*.

On retiring put in use, by contraction, a certain group of muscles; change to another before exhaustion, to another, and thence to another, having a definite routine; and continue until a sense of fatigue has come. The brain meantime is asked to keep a record of the respirations and of the muscular engagements in their order until it, too, says, "Enough!" A few minutes generally suffice.

Will sufferers be willing to use any methods or agents foreign to the *materia medica*? Will the profession venture to suggest any? Sleep immediately on retiring is restorative. The drug does not make it so, continuously used. Wine, tobacco, tea, coffee, and late suppers, with social and emotional excitement, often delay the hour of sleep.

Will you, or will the reader of this proposed method, say if you have any experience with it or any similar experiments, and give results? My own personal needs were at the foundation of this "discourse." Conditions of the heart, digestion, and nervous system should not be ignored in any case of insomnia. The sufferers are abundant everywhere now.

A Diphtheria Incident.

Dr. William P. Munn, the health commissioner of Denver, in the report of the bureau of public health, for the year 1895, just issued, gives the following instructive and only too common incident of the manner of the spread of diphtheria. It is not often that a series of cases is so well traced.

On June 24 I was asked to see a little girl, with Dr. H., and to administer diphtheria antitoxin. It was a pronounced case of diphtheria, membrane on the left tonsil, and diagnosis confirmed by bacteriologic examination. The antitoxin was administered, and the patient recovered. Inquiry into the history of this case revealed an interesting and instructive history of diphtheria in the house. In April the father suffered from a sore throat for several weeks, but attached no importance to it. At

the end of that time, as recovery seemed to be delayed, he consulted a physician, who made a diagnosis of ulcerated sore throat. Several weeks later, the housekeeper, a woman of about 40 years, suffering from tuberculosis, had a membranous sore throat, which her physician likewise designated as an ulcerated sore throat. Then a boy of 8 years had a sore throat, but no physician was employed. Then a girl of 13 complained of slight sore throat, to which no attention was paid at first, but after a week she developed alarming symptoms of heart weakness, when a physician was called and arrived just in time to see her die. Two days later the third child complained, and an examination being made as described, the case was found to be one of pure Klebs-Löffler infection. It is now plainly evident that all of the patients had suffered from diphtheria, which might have been positively diagnosed had the physicians availed themselves at an earlier date of a bacteriologic examination.

[The father suffered for two months from paralysis of the palate and regurgitation of fluids through the nose.]

Some Parts that Youths have Played in History.

A curious inquirer has made research among the facts of history, and sets forth the following :

Jefferson, at 33, drafted the Declaration of Independence.

General Sheridan was 34 at the close of the war.

Napoleon was Emperor of France at 35.

Commodore Perry fought the battle of Lake Erie at 28, and died at 34.

Nelson was 40 at the battle of Aboukir.

Hamilton was 30 at the close of the War of the Revolution.

Fulton was 38 when he launched the first steamboat.

John Hancock was 38 when president of the Continental Congress.

Henry Clay, at 37, was United States Commissioner to negotiate the Treaty of Ghent.

William Pitt was Prime Minister at 27.

Robert Bruce, at 40, defeated the English at Bannockburn.

Daniel Webster, at 36, was the leading lawyer in the United States.

Hygiene of the Eye.

When the eyes ache close them for five minutes.

When they burn bathe them in water as hot as can be borne, with a dash of witch-hazel in it.

After weeping bathe them in rose-water and lay a towel wet in rose-water over them for five minutes.

When they are bloodshot sleep more.

When the whites are yellow and the pupils dull, consult your doctor about your diet.—*Medical Brief*.

Cause of Electric Death.

Experiments have been made by A. M. Bleile upon dogs in order to determine the cause of death in electric shock. The conclusion reached is that for a given animal in a normal condition as to health, a definite amount of electric energy will produce fatal results. It is thought that the action of the electric discharge is to contract the arteries and increase the pressure of the blood, and that death is due to inability on the part of the heart to sustain the increased pressure of the blood so produced. Post-mortem examinations seem to show that the passage of the current does not cause any anatomic disintegration.—*Popular Science*, September.

Some Thoughts on the Origin and Spread of Contagious Diseases.

Dr. W. H. Faulds, of Luzerne, Pa., thus concludes an article in the *Medical News*,—

(1) That non-virulent microbes exist in all parts of the habitable globe.

(2) That they were made disease-producing in the case of cholera, small-pox, syphilis, diphtheria, and tuberculosis in the thickly-populated centres of the Old World through overcrowding and bad hygienic conditions, such as have never been known to us.

(3) That the virus is always derived from a previous case, and is spread, either directly or indirectly, through human intercourse.

(4) That increased vital resistance renders persons immune only in tuberculosis and other exceptional instances.

(5) That if virulent bacteria could be prevented from finding a lodgement in human tissue they would, for want of nutritive pabulum, soon return to their primitive dormant state.

(6) That isolation, quarantine, and disinfection, under the direction of bacteriologists, are the only means by which we may hope to successfully prevent the spread of contagious and infectious diseases.

Cream in Congenital Constipation.

A Brooklyn physician states in the *Medical World* that the main dietetic cause of infantile costiveness is a deficiency of fat in the food. A large percentage can be successfully met by increasing the fat digested. It has been his practice in the past two years to give the child from one-half to a tablespoonful of cream before feeding. The child may refuse to take it readily, but by sweetening the cream with loaf sugar the child soon becomes fond of it, and will accept all that is offered. Upon following this plan your cases of congenital constipation will suddenly diminish, and the child in the very depth of its soul will feel comfort.

Sweeping Carpets.

It is easier and better to use a whisk broom for sweeping a fine carpet than a broom with a long handle. Carpets that have a long nap should be swept in but one direction. Otherwise you sweep the dust into them instead of out of them.

It is a slovenly housekeeper who uses a feather duster for all purposes. Feathers are useful for getting into corners and for cleaning ornaments into which you cannot manage to thrust a cloth, but such dusters only scatter the dust.

You need a cloth to gather it and remove it permanently. Blue cotton handkerchiefs are good for ordinary purposes, but cheese-cloth is best for fine furniture.

Electric Fans in Warships.

A revolution in the methods of ventilating warships is imminent, and before long the ludicrous and objectionable cowl will become as obsolete as the spritsail yard. The use of electricity enables a complete system of ventilation to be carried out, which

was never before possible. Formerly each fan had to be provided with its own steam-engine, and, to say nothing of the circumstance that the machines took up a good deal of space, there were dozens of situations quite suitable for a fan alone, but most unfit for a steam-engine. An electrically driven horizontal fan, with its motor, can now be introduced into the thickness of a deck with its beams, if need be, and, in point of fact, such fans can now be used to excellent purpose in any place on board ship where they are deemed desirable.

Phosphorous Necrosis.

Mr. Edwin Gould, who owns a large match-factory at Passaic, N. J., has recently promulgated an order that all employées who do not present within a specified time a dentist's certificate that their teeth are in a condition of perfect repair shall be discharged. The danger of necrosis of the jaw from the phosphorus used in the manufacture of matches is well known, and he is said to have been induced to take this step by the fact that not long since an employé of one of the Diamond Match-Factories in Ohio, who had been attacked with necrosis, sued the corporation for \$10,000 damages.—*Boston Medical and Surgical Journal*, September 24.

English Ladies Shock Li.

The feature of English life which most astonished Li Hung Chang and his companions was the evening dress of English women. A member of the envoy's suite thus recorded his impression before sailing from London :

“I was much surprised at the reception given by an English nobleman to see ladies with uncovered shoulders, arms, and neck. I was still more surprised to see gentlemen taking ladies' arms, because in China taking ladies' arms, or even shaking hands, is not known.

“The question has been asked me many times why the Chinese never wear gloves, whereas in England it is the custom to cover the hands with gloves in genteel society. But it seems to me so very strange to cover the hands and expose the arms, neck, and breast.

“I feel that I would rather that Chinese ladies did not wear gloves than that they should show their bare arms and chests.”

The Siesta and Digestion.

Some recent experiments are reported in the *Gaz. degli Osp. e delle Clin.*, of September 1, which demonstrate that a nap after eating weakens the muscular action of the stomach and increases the secretion of acid. Repose in a horizontal position, without sleeping, increases the muscular action without increasing the secretion of acid. The conclusions are, therefore, that it is advisable to lie down after a meal, but not to fall asleep, especially in case of dilatation of the stomach or hyperacidity.

The Terrible Legacies of Small-Pox.

The ravages of small-pox cannot be fully estimated simply by counting the victims whom it slew. Those who survived an attack were frequently mere wrecks,—consumptives, scrofulous, asthmatic, dropsical, lame, deaf, blind. A report of the Institution for the Indigent Blind, quoted by Sir Gilbert Blane, states that two-thirds of those who applied there for relief had lost their sight from small-pox. According to Pissin the records of hospitals for diseases of the eye at Dresden and Munich show a very large proportion of cases of blindness due to small-pox. As Tralles, writing in 1765, puts it: "From the time small-pox became known to the present day there have been myriads of examples of the sad traces which they have left in the human body and all its parts."—*British Medical Journal*.

High Tides affect Wells.

The high-water marks of several extraordinarily high tides have been kept at Easton Point, St. Michael's, and Oxford. What is known as the "centennial tide" of September, 1876, has held the record of the highest water mark, and still holds it, although last Thursday morning's (October 1) tide was within an inch of the centennial mark. The recent flood had a singular effect on the flow of the artesian wells on Tilghman's Island. These wells average 400 feet in depth, and many of them have a surface overflow, which increased fully double in velocity and more in volume when the tide was at its highest. It has been noticed before that any unusual high tide is perceptible in the effect it has on the flow of the wells.—*Baltimore Sun*.

The Deadly Chewing-Gum.

A young man who was scorching for a record on a bicycle-track, a few days ago, was thrown from his wheel. When picked up his face was cyanotic and his arms and legs were twitching convulsively. A physician found a ball of chewing-gum, the size of a walnut, obstructing the entrance to the larynx. The gum was removed and the man recovered. In the interests of æsthetics it is to be hoped that this accident will serve as a warning to wheelmen at least, if not to other men, to desist from this deforming habit.

The Abolition of Quarantine.

Under the title of "Public Health Act, 1896," we have this year done away with the last vestige of quarantine in the United Kingdom. The full title of the Act is: "An Act to make further provision with respect to epidemic, endemic, and infectious diseases, and to repeal the Acts relating to quarantine." The principal section of the Act is the first one, in which power is granted to the Local Government Board to make regulations, just as they have already done for the purposes of cholera, as to the hoisting of signals by vessels having any case of infectious disease on board; as to the questions to be answered by masters, pilots, and others; as to the detention of vessels and persons infected; and as to the duties of certain individuals under the regulations. The term "epidemic, endemic, or infectious disease" naturally includes yellow fever and plague, the only two diseases as to which quarantine was carried out, and since all the quarantine acts mentioned in a schedule are repealed, the only method of dealing with these two quarantinable diseases will in the future be that which has now been adopted for many years as regards cholera. In Scotland and in Ireland the Local Government Boards of those portions of the kingdom acquire similar powers, and it may be assumed that the regulations made in the three portions of the United Kingdom will be alike in all essential respects. The Act comes into operation on November 7 of this year, and by that time new regulations will doubtless have been issued to give effect to its provisions. It is to be hoped that our colonies, and, above all, our Crown colonies, will be led before long to act on the same principles as those which have been so successfully carried out in the mother country.—*London Lancet.*

Influence of Sugar on the Energy of the Muscles.

Schumburg states that he has been experimenting with Mosso's ergograph to determine whether sugar increased the muscular power, as some assert, or whether the increase in energy observed is due to psychic influences. He found that the sugar produced no perceptible effect on fresh, unfatigued muscles, but that muscles fatigued from previous severe exertion were strengthened to a noticeable degree. This effect was attained whether the muscles were strong or weak.—*Deutsche medicinische Wochenschrift*, August 20.

A Foul Air Indicator.

At the Industrial Exposition at Zurich, Switzerland, there was exhibited an air tester which is designated to show whether and in what degree the air in a workshop or other inhabited room is contaminated. The apparatus is described as consisting of an air-tight closed glass vessel filled with a red fluid. Through a glass tube that dips into the liquid and is bent at the top a drop falls every 100 seconds on a cord that hangs beneath and that is somewhat stretched by a weight. The fluid from which the drop comes has the property of changing its color by the action of carbonic acid. The more carbonic acid there is in the air the quicker this change in color takes place. If the air is very foul the drop becomes white at the upper end of the cord, while the change of color corresponding to a slight proportion of carbonic acid does not take place till the drop has run farther along the cord. The exact condition of the air can be ascertained by observing a scale that is placed alongside the cord and divided into convenient parts, bearing the designations, "extremely bad," "very bad," "passable," "pure."

The Old-Time Enemies of Water.

A writer in *Hospital* has made a partial collection of the sentiments of the ancient as opposed to the virtues and values of that blessing, water. In fact, he says, there are very few old writers who say a good word in its favor. The "Venerable Bede" (673-735) prescribed the following general directions: "In June of a morning a cup of cold water, fasting; for July the same, but in October for sweetening the blood, for the expulsion

of stone, and for healing the lungs, instead of water one should take the milk of goats or sheep and should not wash very often; in February one should foment the limbs; in August he should not refresh in cold water, but in January he should plunge his body into warm water." One or two writers only are concerned to maintain that, "when begun in early life it (water) may be pretty freely drank with impunity," and they quote the curious instance given by Sir Thomas Elyot in his "Castel of Health" (1534) of the Cornish men, "many of the poorer sort, which never, or very seldom, drink any other drink, be notwithstanding strong of body and like, and live well until they be of great age." Thomas Cogan, the medical schoolmaster of Manchester fame, confessed in his "Haven of Health," 1589, designed for the use of students, that he knew some who drank cold water at night or fasting in the morning without hurt; and Dr. James Hart, writing about fifty years later, could even claim among his acquaintance "some honorable and worshipful ladies who drank little other drink and yet enjoyed more perfect health than most of them that drank of the strongest." The phenomenon was undeniable, but the natural inference was none the less to be resisted. Sir Thomas Elyot himself is very certain, in spite of the Cornish men, that "there be in water causes of divers diseases, as of swelling of the spleen and liver." He complains oddly also that "it flitteth and swimmeth," and concludes that "to young men and them that be of hot complexions it doeth less harm, and sometimes it profiteth, but to them that are feeble, old, and melancholy it is not convenient." "Water is not wholesome drink by itself for an Englishman," was the verdict of Andrew Borde, who was author of a "Breviarie of Health," and who died in prison (1549), probably for debt, since it was his habit to make humorous speeches at fairs and who originated the sobriquet of "Merry Andrew." But the most formal indictment against water is that of Venner, who, in writing in 1622, ponderously pronounces "to dwellers in cold countries it doth very greatly deject their appetites, destroy the natural heat, and overthrow the strength of the stomach, and consequently confounding the concoction, is the cause of crudities, fluctuations, and windiness in the body." But be this as it may, allowances must be made for the numerous marshes and lazy streams of the day, which may have unconsciously pointed the moral of avoidance. Besides, too, there may have been rampant the usual excuses for

intemperance, and the growing favor of boiled, or for the matter of that, malt drinks. For even at this late date the ingenuity of man is not so much wasted upon a pure water-supply as upon the varied flavors of the shops, especially during a heated term. There are no fears, especially if the compound is well sugared and defies an analysis of its elements. Man yearns for the toothsome rather than for the salubrious.

Elastic did it.

A young girl who has suffered for months from violent headaches has recently discovered the cause, which is simple and easily removed. Owing to the new style of hats which do not fit well on the head, the crowns being ridiculously small, she has worn an elastic and made it tight, so that it pressed on the nerves at the back of the neck. Any hat which binds the head will produce headache, as an elastic, such as the one described, will produce the most intense pain, especially if while wearing the hat one is exposed either to wind or sun.

Ideal Farm Village.

A little secluded Dartmoor village, known as Buckland-in-the-Moor, is in the fortunate position of not having had a pauper among its inhabitants for close upon twenty years. The village is also noteworthy from the fact that it is without a public house, and does not possess either a policeman or a clergyman.

With the exception of one small estate held in trust for the church, the whole parish is owned by the squire. The farms are only small, and the occupiers, as a rule, are able to work them with only occasional assistance beyond that provided by their families.

The squire seems to take a paternal interest in the people, for if sickness keeps the men home a week or so he pays their wages as usual. If they go "on the club" they receive ten shillings a week, and he adds the amount necessary to make up the total of their wages, while those not in a club receive half-pay. When men are too old for work they are continued on the pay-list.—*Tit-Bits*.

The Beastly Climate.

He threw himself on the lounge and exclaimed mournfully, "I guess we'd better sell out and move."

"I don't think so," was his wife's emphatic reply. "We have made our home here, and our friends are here, and I'm sure there isn't a prettier city anywhere."

"I don't like the climate."

"Everybody else seems to think it's as good a climate, take it the year round, as is to be found in the whole country."

"It doesn't agree with me. My health's bad."

"It wasn't bad this morning. You said you never were better."

"That's the worst part of it. It's one of those mysterious things. I can't just say what's the matter with me, and yet I know that I feel terribly bad. It's that gloomy uncertainty of it that makes it dreadful." And he gave a suppressed groan.

"You don't pay enough attention to your diet," she said, with the quiet emphasis which betrays a thorough knowledge of one's subject.

"That simply shows how a woman will jump at a conclusion. I didn't eat any luncheon till 2 o'clock, and then I discovered that I felt a little played out. I knew that if I didn't eat anything you'd say that was what made me feel badly. So I put my coat right on and got a bite or two, just to keep you from complaining."

"What did you eat?" his wife inquired, suspiciously.

"I ate a caviar sandwich and drank a glass of buttermilk."

"Nothing else?"

"Yes. I didn't feel right just then, so I got a piece of lemon custard pie. That didn't do much good, so I bought some pears at the fruit-stand and ate them, but they didn't help. If anything, I felt worse than ever. I thought maybe I was overheated, so I went back to the lunch-room and got a dish of ice-cream and some angel cake, and just before I started home I drank a glass of root-beer, but it was no use. I don't feel right yet, and I've made up my mind that if I want to keep my health the only thing more for me to do is to move out and go to some place where the climate agrees with me."

His wife looked at him, but did not try to argue. She merely called the hired girl and sent her on an errand to the drug-store.
—*Detroit Free Press.*

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